

The Mining Journal

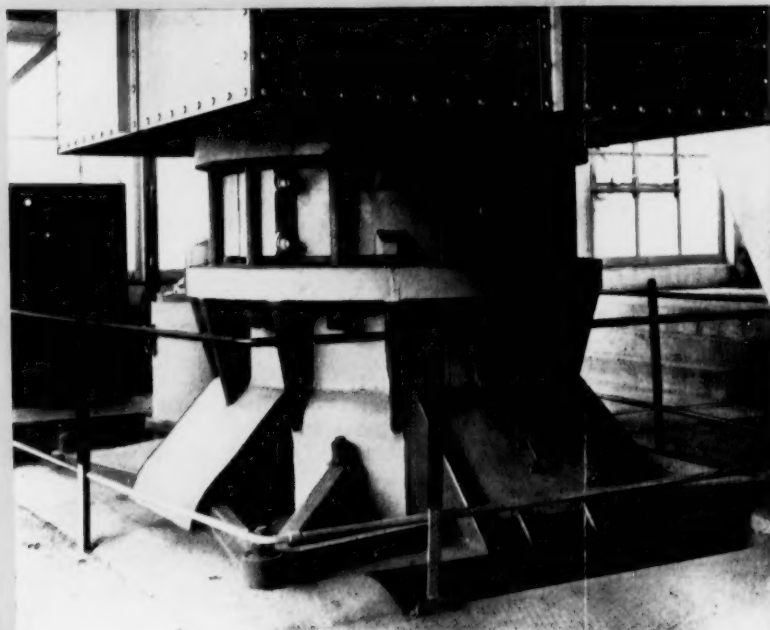
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Railway & Commercial Gazette

Vol. CCXLIV No. 6252

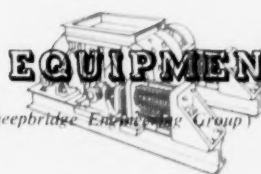
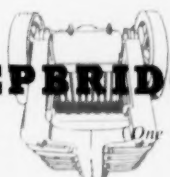
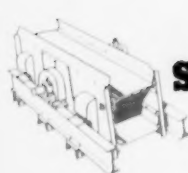
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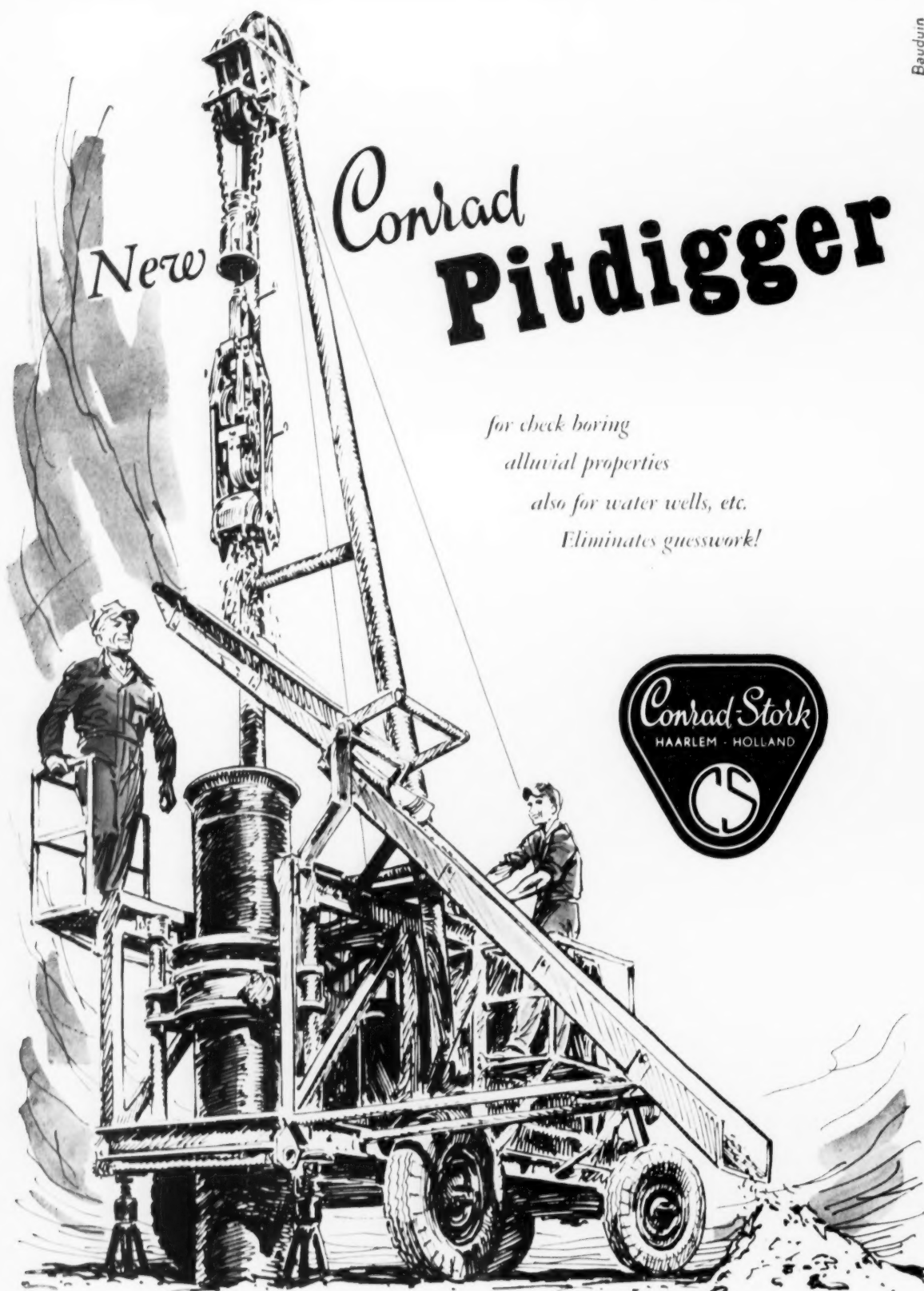
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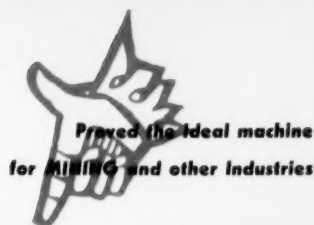
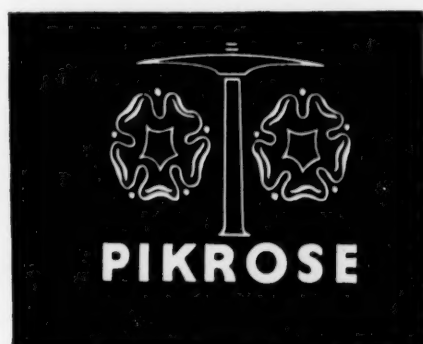


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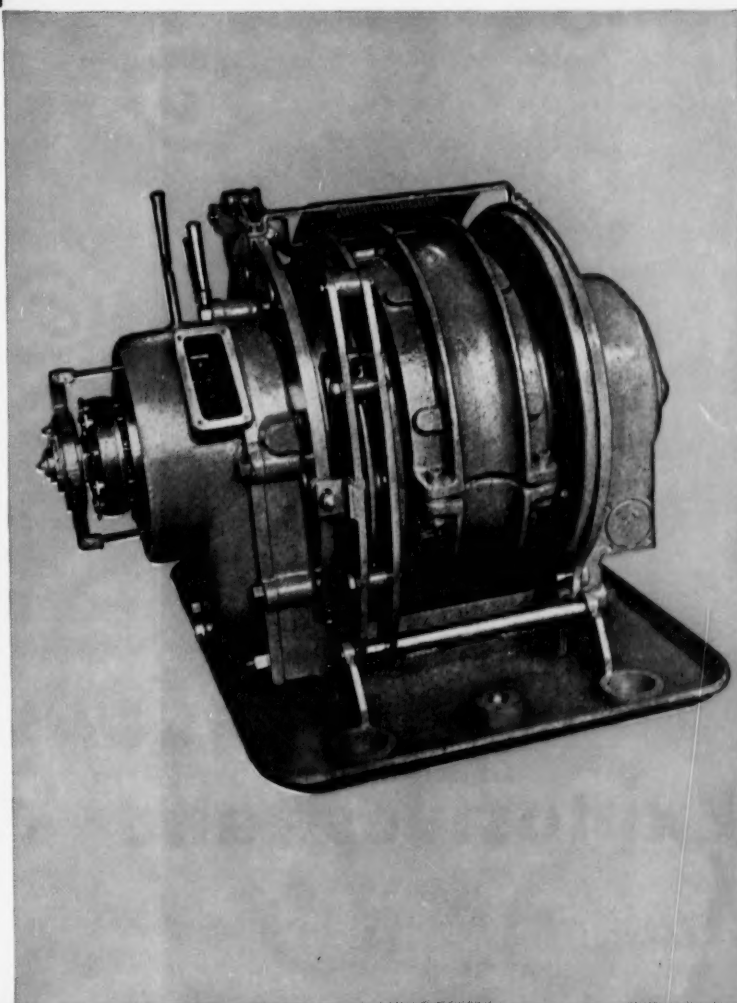
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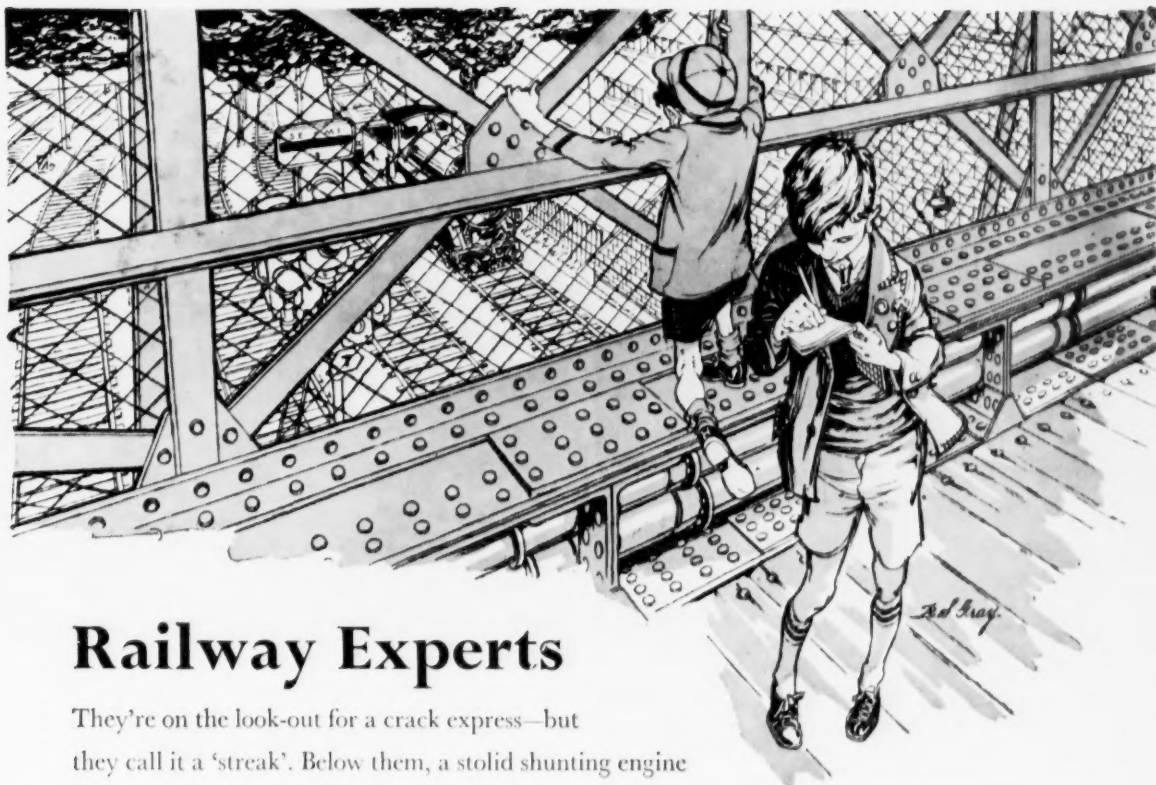
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P. 44



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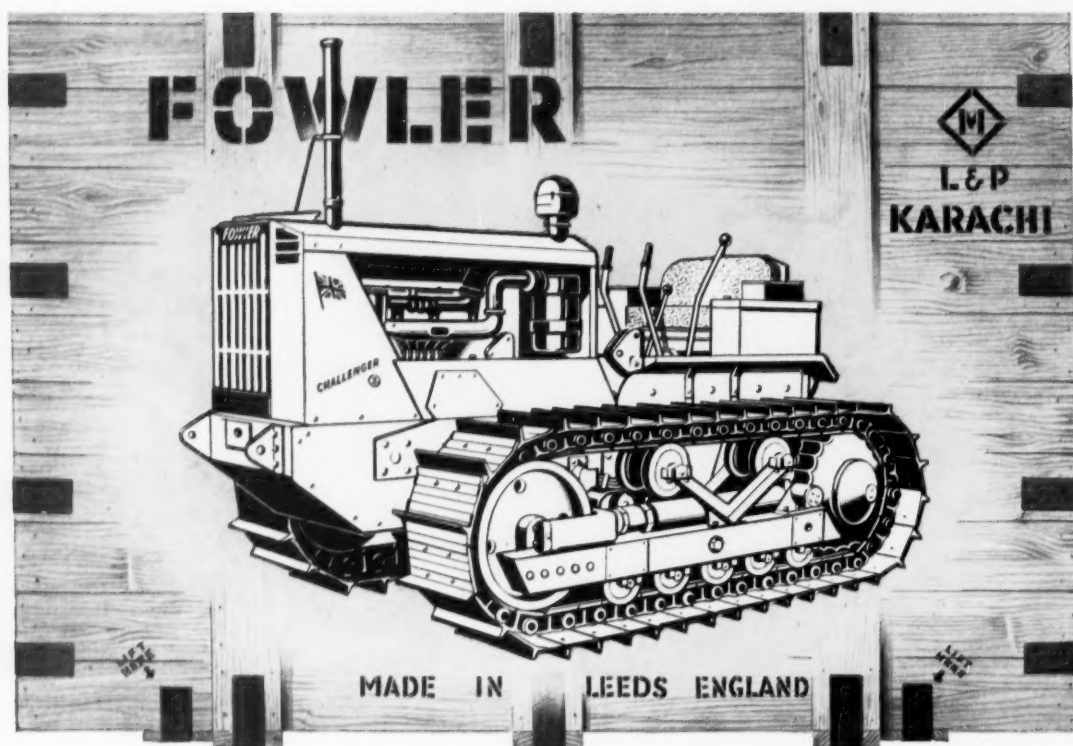
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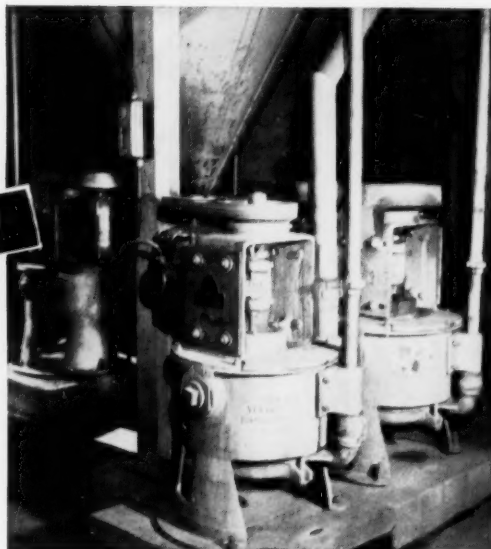
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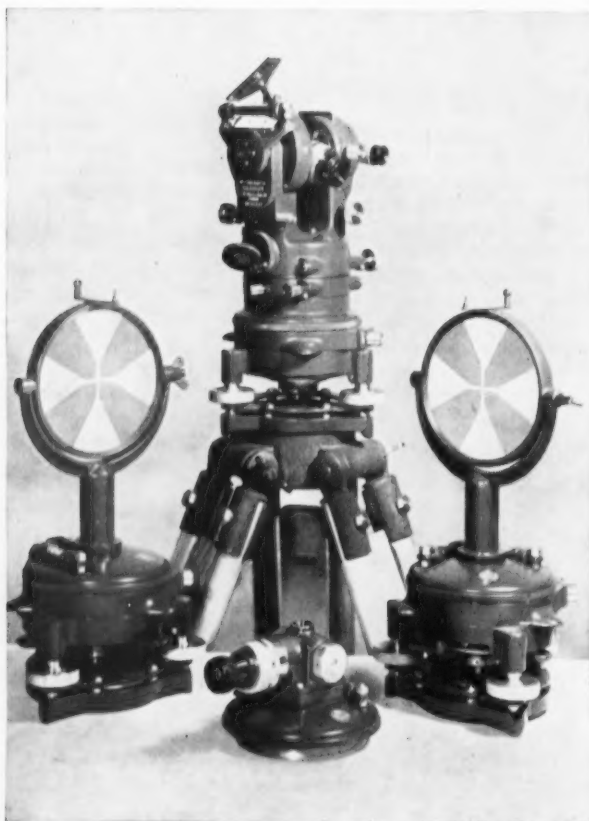


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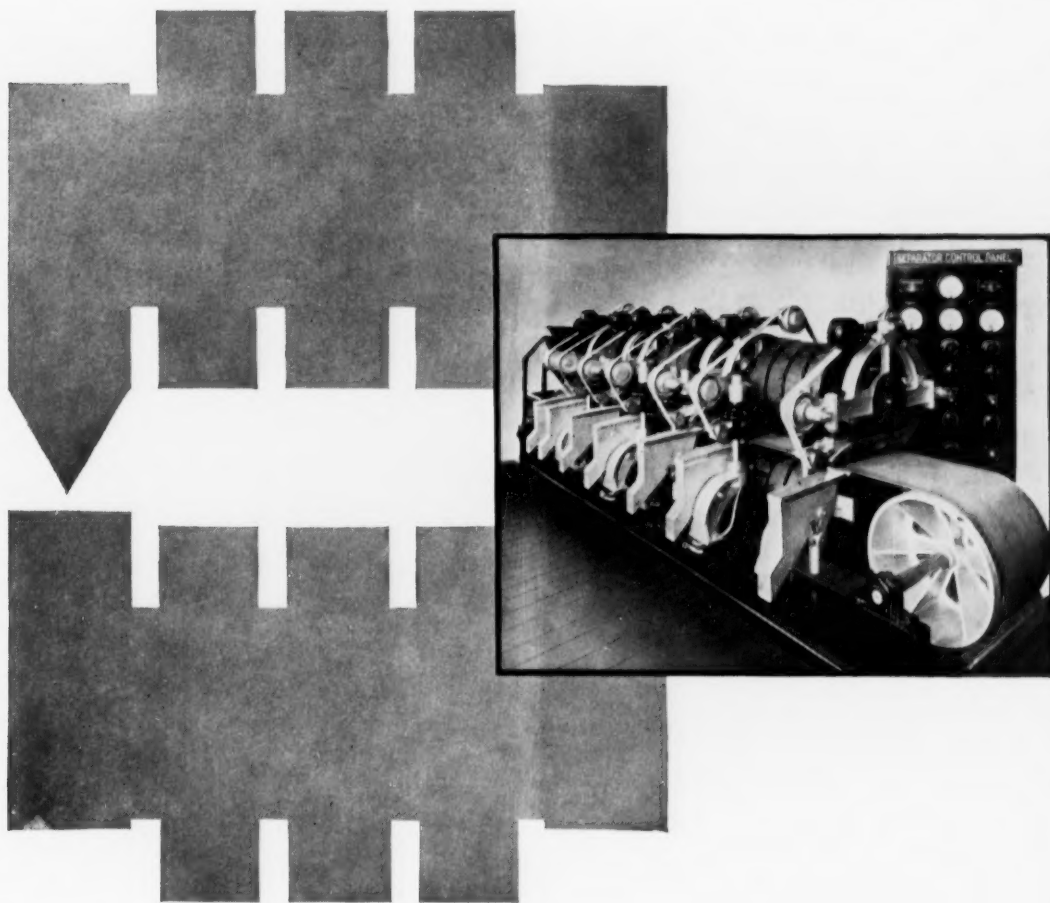
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The Mining Journal

Established 1835

Vol. CCXLIV No. 6252

LONDON, JUNE 17, 1955

PRICE 8d.

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Published by The Mining Journal Ltd., at 15 Wilson Street, Moorgate, London, E.C.2. MONarch 2567 Subscription £2 per annum

NOTES AND COMMENTS

Netherlands to Repay Lend-Lease Silver

In April, 1957, the final repayment is due to the United States of the "lend lease silver" sent by the U.S. to the U.K., India, Holland, Australia and other countries during and immediately after the war. Until last year the amounts still outstanding had remained unchanged since 1947.

Last week, however, the Netherlands agreed to return to the U.S. a quantity of silver alloy containing 56,737,341 troy oz. of fine silver. The Netherlands Government received this silver from the U.S. Treasury under lend-lease during the war to enable it to issue coins. In July, 1944, the United States Government stipulated that the silver should be returned equivalent in quantity and form within five years after the war had ended. Subsequently, it appeared that the Netherlands Mint had available only copper-alloyed silver, partly in bars and partly in coin and that refining in such large quantities would involve much time and an expense of some 5,000,000 guilders, equivalent to approximately U.S. \$1,315,000. But after an exchange of letters, the U.S. agreed to accept the alloyed mint silver, the fine silver content of which would be deducted from Holland's lend-lease debt, while the U.S. Treasury would pay for the copper contained in the alloy.

The agreement now arrived at relates to approximately 52,400,000 troy oz. of fine silver, thus leaving some 4,300,000 troy oz. which are considered the responsibility of the Indonesian Government—the successor to the wartime Netherlands Indies Government. The *American Metal Market* in reporting the Netherlands proposed payment added that it had not yet been ascertained in what way the Indonesian Government would observe its obligations in this respect.

The text of the agreement has been submitted to both Chambers of the Netherlands Parliament, whose approval is expected at an early date.

Frobisher and the U.D.C. to Develop Sukulu

During the course of the last year's development, the Tororo Exploration Company piloted and improved processes for working up the Sukulu mineral complex to produce high grade apatite and niobium.

It may be recalled from previous references in *The Mining Journal* that the Tororo Exploration Company, which is a syndicate of three companies—Monsanto Chemicals, Frobisher Ltd., and the Uganda Development Corporation—discovered about two years ago some 2,000,000 tons of soil around Tororo in Uganda containing workable amounts of apatite and pyrochlore.

The chief interest of Monsanto Chemicals in the project was the utilization of the apatite to establish an all-sterling source of elemental phosphorus in Uganda. But the production of elemental phosphorus, though practicable, has not proved sufficiently attractive economically for its particular purpose, and therefore Monsanto Chemicals has announced that it will shortly be terminating its interest in the syndicate.

The other two partners, Frobisher Ltd. and the Uganda Development Corporation, are going ahead with their plans to produce and market the apatite and the niobium.

Lord Harlech and the Industrialization of West Africa

Lord Harlech, chairman of the Bank of British West Africa, in his annual statement to shareholders, gave an analysis of the present economic position of the four West African countries in which the Bank is primarily interested.

Generally speaking, these West African countries are passing through a formative period and experiencing the stresses and strains incidental to rapid development. With regard to Sierra Leone, Lord Harlech cited the proposals which had been made for the extension of the franchise on Sierra Leone, together with the arrangements for a greater African participation in government which had been introduced in Gambia. In Nigeria and the Gold Coast the political structure had moved further towards complete local autonomy.

A major factor in the recent prosperity of West African countries has been the prevailing high prices for cocoa. After reaching what Lord Harlech described as "astronomical figures" the price of this commodity has since fallen steadily but nevertheless still sells at levels highly attractive to producer companies. The overall picture is not,

however, without its adverse factors for the shipping strike in the U.K. seriously disturbed the flow of merchandise to West Africa and, in addition, hampered exports.

In the long period of prosperity which has stemmed from the high prices received for her crops, West Africa had made great strides in the provision of public works and services. Living standards had been raised and ample reserves built up to provide against the future. Warning against undue enthusiasm for rapid industrialization, Lord Harlech stressed that West Africa mainly consists of agricultural lands with a population of traditional farmers. It was hoped, he said, that reserves built up would not be so fully committed to the introduction of manufacturing capacity as to deprive the territories of their ability to adjust themselves to sudden fluctuations in the price of their major exports.

To meet this difficulty Lord Harlech stated that the Gold Coast Government proposed to introduce a new currency in 1956 which will be fully backed by sterling—a step which he considered as vital to the country's well being for without a sound currency the Gold Coast would be seriously hampered in its endeavours to attract foreign investment.

B.O.T. Responsible for the Ferrous, Non-Ferrous and Engineering Industries

The Prime Minister announced in the House this week that arrangements would shortly be made for transferring to the Board of Trade the responsibilities hitherto exercised by the Ministry of Supply in relation to the iron and steel, the non-ferrous metals, and the engineering industries. Exceptions in the above categories have been made in the case of the light metals, the aircraft industry and the electronics industry.

These changes have been decided on after consultation with the industries concerned and as the Prime Minister pointed out in the House they carry the support of the majority, although not necessarily of all, of those concerned. The decision reflects a shift of emphasis as between export and defence priorities for the industries concerned. It also suggests an unusual flexibility in the machinery of government. It will be recalled that shortly after the war responsibility for iron and steel was moved from the Board of Trade to the Ministry of Supply precisely because at that time the problems of supply were considered paramount, while to-day a shift is being made in the reverse direction to facilitate the closer co-ordination of export effort.

Strike-Bound M.J. Annuals

As we go to press rail and postal services are rapidly being restored to normal after the unfortunate strike of footplate men which has seriously hampered the economy of the country during the past two and a half weeks. Inevitably the damage caused by the strike will extend beyond its actual termination and even now the less publicized dock strike has yet to be settled and may well in the event prove to have been the more damaging of the two to Britain's export industries.

One particular export which has been a partial victim of the rail strike is this year's edition of *The Mining Journal Annual Review*. A small proportion of our overseas mailings has been held up since the first day of the strike and were finally despatched only yesterday. To those of our friends overseas whose copies have been delayed in this way, we can only express our regret, coupled with apologies, on behalf of those of our compatriots who are ready to engage in inter-union disputes at the expense of the national interest.

The Rhodesias

(From Our Own Correspondent)

Salisbury, June 10.

Copper may shortly take its place for the first time with gold, asbestos and chrome as constituting Southern Rhodesia's principal mineral exports. The Umkondo Copper Mine in the Sabi Valley, 25 miles from the Birchenough Bridge, is expected to come into production before the end of the year. This will be the first copper mine in the Colony to be operated on any scale. It is being developed by the Messina (Transvaal) Development Co. Ltd., who plan to convey the copper concentrates from the mine in diesel lorries to their copper plant at Messina in South Africa just south of the Southern Rhodesia border. The same company is also interested in the Molly Mine, 30 miles north of Sinoia, which, it was reported here this week, may prove to be an even bigger venture than the Umkondo Mine. A copper smelter, it is understood, may also be established at Molly Mine.

The only copper mining hitherto done on any scale in Southern Rhodesia was at the Falcon Mine, Umvuma. But in the 11 years the mine was producing, from 1914 to 1925, its output totalled only 34,127 tons.

An exclusive prospecting order in favour of Messina (Transvaal) Development Co. Ltd., in a prescribed area in the vicinity of Tondongwe Road and the Rukute River in Southern Rhodesia, has been granted by the Southern Rhodesia Minister of Mines, Mr. G. A. Davenport. The order has been made solely in respect of nickel, copper and associated minerals. Another condition is that the sum of £7,500 shall be spent on operations during the period of the order.

COPPERBELT LABOUR

The Governor of Northern Rhodesia, Sir Arthur Benson, told the African Representative Council recently that rationalization of African labour on the Copperbelt in Northern Rhodesia would eventually mean that the present African labour force in the four main producing mines would be reduced by 10,000. He said the result of introducing new methods and new machines would be an eventual fall in the total labour force from 40,000 to 30,000.

The Governor's references indicate the probable goal of rationalization measures which have been going on steadily on the Copperbelt over the past two years to the accompaniment of a steady rise in African wages.

Sir Arthur said that though cutting down the size of the labour force might at first appear serious, there were advantages. He foresaw more able-bodied men and women being available to help develop the rural areas of Northern Rhodesia than there would otherwise have been—a step which may lead to greater food production, presently Northern Rhodesia's greatest economic need.

Rhodesia Cement Ltd., of Colleen Bawn, in Southern Rhodesia, has announced that the output of cement in the Federation will soon be big enough to supply all normal local demands, with enough left over for the construction needs of the Kariba dam.

It is estimated that the total cement production from all sources in the Federation would soon be at the rate of 620,000 tons a year. This should be sufficient to satisfy local demand and leave enough over for the Kariba dam. A statement by the company said this would be an important factor in keeping down the cost of the Kariba hydro-electric scheme, at present estimated at £85,000,000.

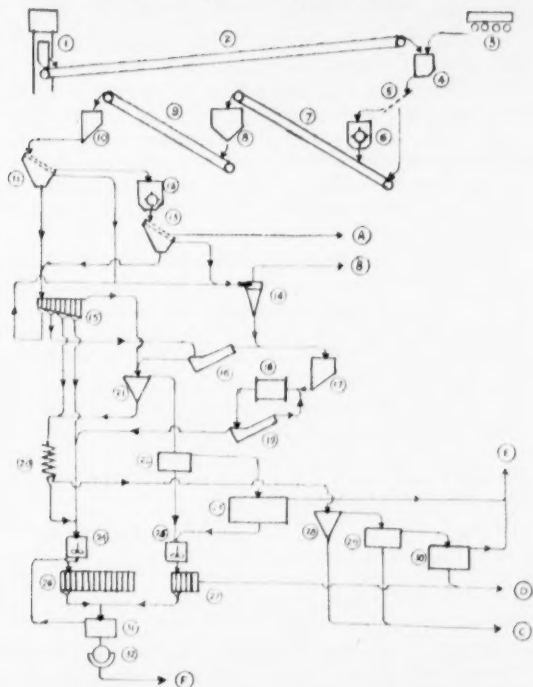
Lead Concentrator at Mechernich, W. Germany

The deposit worked by the Mechernicher Werke Mining Co. is situated 50 km. S.W. of Cologne and comprises sandstones and conglomerates which contain galena, cerussite and in some places a little sphalerite. The following article describes the unique flowsheet used in the Mechernich plant.

The ore mined at Mechernich, W. Germany, only contains 1.1 to 1.3 per cent Pb with 0.01 per cent Zn, 0.004 per cent Cu, and some 3 grm. of silver per ton.

At the present time 5,000 to 6,000 tons is raised daily by open pit and underground mining, using a room and pillar method. Some 60 per cent is derived from the open-cast operations.

In the present plant, considerable use is made of pre-concentration before flotation and the flowsheet is certainly unique. This procedure has been adopted in order to



Flowsheet of Mechernich dressing plant: (1) Ore from shaft; (2) Conveyor; (3) Ore from open pits; (4) Two coarse ore bins with feeders; (5) Two 4,000 x 1,800 mm. screens, 90 mm. opening; (6) Two Hazemag impact mills, 1,600 x 1,300 mm. running at 245 r.p.m.; (7) Conveyor; (8) 5,000 tons ore bin; (9) Conveyor; (10) Ore bin; (11) Three Niagara type screens (double deck) with 8 mm. screen on the upper deck and 3 mm. opening on the lower deck, each 5,000 x 1,400 mm.; (12) Three Hazemag impact mills, 1,000 x 430 mm. running at 320 r.p.m.; (13) Three Niagara type screens 4,000 x 1,000 mm. fitted with double deck screens having 8 mm. and 3 mm. openings respectively; (14) Heavy Media cyclone (using ferrosilicon medium); (15) Four Dorr Hydrosizers having 9 spigots; (16) Four spiral classifiers 760 mm. dia.; (17) Two fine sand bins; (18) Two Wedag ball mills each 2,170 mm. dia. and 3,000 mm. long and two Humboldt ball mills 2,750 mm. dia. by 3,000 mm.; (19) Two Wedag rake classifiers 6,000 x 1,800 mm. and two Humboldt rake classifiers 9,000 x 1,800 mm.; (20) 32 Humphreys spirals each treating about 1½ tons per hr.; (21) 5,000 x 5,000 mm. Spitzkasten; (22) One 20 mm. hydroseparator; (23) One 60 mm. thickener; (24) Three conditioners; (25) Two conditioners; (26) Two 12-cell Humboldt flotation machines, four 10-cell Wedag machines and four 12-cell Zellen pneumatic machines; (27) Two 12-cell pneumatic flotation machines; (28) 5,000 x 5,000 mm. Spitzkasten; (29) One 12 mm. hydroseparator; (30) One 30 mm. thickener; (31) One 12 mm. thickener; (32) Two rotary drum filters; (A) Oversize from screens (tailing); (B) Tailing from H.M.S. cyclone; (C) Sand tailing; (D) Fine sand and slime tailing; (E) Water clarified for re-use; (F) Final concentrate.



One of the two primary impact crushers

reduce the cost of fine grinding as well as that of flotation reagents when handling a low grade siliceous feed such as is found at Mechernich.

To achieve this pre-concentration, three different methods are utilized:

- Selective crushing in impact mills after which screening at 8 mm. removes 30 to 40 per cent of the total tonnage as oversize containing too little lead to be worth further treatment;
- Separation in Heavy Medium Cyclone for material between 8 mm. and 1 mm.
- Concentration of material between 0.5 and 0.1 mm. in Humphrey's spirals after classification and desliming in a Dorr Hydrosizer.

In these operations with a head value of 1.16 per cent Pb, a typical result shows 34.4 per cent rejected as oversize on the 8 mm. screen, carrying 0.13 per cent Pb, 3.3 per cent of the feed eliminated by the cyclone, carrying 0.36 per cent Pb and 10.1 per cent as tailing from the spirals containing 0.25 per cent Pb. By using the three processes of pre-concentration, 47.8 per cent is rejected carrying 0.21 per cent Pb but it is clear that the bulk of the separation is achieved by selective crushing and screening which not only yields the best results but is the most economical.

The natural "fines" as well as the concentrate from the cyclone and from the spirals is finally ground and treated by flotation using separate circuits for the granular material and the primary slime. A final lead concentrate is made assaying from 65 to 70 per cent Pb with an overall recovery of 77 to 80 per cent.

The flotation feed has a maximum size of 0.4 mm. with 40 per cent—0.15 mm. and is conditioned ahead of flotation employing a pulp density of 1.4 to 1.45 for the granular material and some 1.2 for the primary slime.

The following table gives details of reagent consumption.

Reagent	Flotation feed (gal./ton)
Potassium ethyl xanthate	35-50
Carbinol 330	110-125
Sapinol 20	35-50
Waterglass	250-350
Sodium sulphide	1,900-2,600
Lime	100-200
pH	9.6 to 11.0

Power consumption is approximately 10 kWh per ton and wear in the crushing and grinding is under 1 kg. per ton. By pre-concentration the overall recovery is better, averaging 77 per cent compared with only about 74 per cent if all flotation were used.

Progress and Prospects of the Mining Industry in Morocco

Small operational margins and high costs of transportation combine to create considerable difficulties for mine operators in Morocco, where the Protectorate authorities are to devote larger credits to prospecting and exploitation projects in an effort to stimulate the mining industry. The following article, condensed from *Newsletter*, No. 19, published monthly by the Committee for Moroccan Studies and Surveys, describes the difficulties faced by the industry and the steps being taken to alleviate them.

At the time of the Korean war, when the price of raw materials rose on world markets, Morocco's mining industry enjoyed a temporary boom. Since the end of the war, however, several mines have become uneconomic and have had to close down. In addition, some prospecting projects have been abandoned.

One of the main reasons for the difficulties facing some marginal mines is that they are saddled with high transportation costs. Many mineral deposits in Morocco are located in desolate areas east of the Atlas mountains where roads are unsuitable for heavy traffic and where, except for the Nemours-Colomb Beshar line, railways are as yet non-existent.

Coupled with high transportation costs is the general hardening of world markets which is hitting Moroccan mines because of their small operational margins.

INCREASED CREDITS

In order to boost the local mining industry, or at least keep production up to the present level, the Protectorate authorities have decided to devote larger credits to mineral prospecting and exploitation projects. This will be done within the framework of the second four-year plan, which started last year, and the work will be confided to the Bureau de Recherches et Participations Minières (BRPM), a State organization.

In the period 1954-57, the BRPM will invest State capital to develop Morocco's mineral resources and this will be done in two ways. First, by means of carrying out prospecting with its own equipment and staff, and by investing capital in private prospecting companies or individuals. Second, by making loans to private exploitation companies.

Either directly or in participation with private enterprises, the BRPM's prospecting programme envisages the expenditure of \$1,143,000 a year (£400,000) for four years. This investment will be financed with \$286,000 (£100,000) a year from the Cherifian Phosphates Office, \$429,000 (£150,000) a year from the BRPM's own revenues, and \$429,000 from the Modernization and Equipment Fund, a French agency.

Approximately \$286,000 of these funds will be devoted annually to direct prospecting by the BRPM itself on deposits of copper ore; while other mineral deposits will be prospected directly also (\$572,000) or through private enterprise. In the latter categories, activity will be concentrated on zinc, lead, tungsten, molybdenum and potassium.

Loans to a maximum value of \$572,000 a year (£200,000) will also be made available by the BRPM to private enterprises for the purpose of prospecting and re-equipment. These loans will be made possible thanks to the new Protectorate policy of giving support to viable local industries. The programme is at present being studied in Paris and any subsidies made will be of a temporary character only.

While most mineral extraction plans are designed primarily to maintain the present level of production, development in the phosphates industry will, it is hoped, increase output even more. Output is more or less constant at present at 4,000,000 tons a year, making Morocco the world's

second largest producer, next to the United States. During the current four-year plan the Cherifian Phosphates Office will plough back a large proportion of its earnings into the industry. In four years, reinvestments are expected to total \$18,471,000 (£6,465,000).

INDIVIDUAL DEVELOPMENTS

Because of the particularly difficult transportation problems of several manganese mines, it is not expected that overall production will rise during the current plan, and total output is likely to remain in the region of 400,000-450,000 tons a year. If the world price falls some marginal manganese mines may have to stop operating, but the main mines at Bou Arfa, Ikidel, Tafraout and Imini are expected to be able to make up for this by increased individual production.

Lead production reached 110,000 tons in 1953 and zinc 65,000 tons. The aim is to step up both of these during the current plan. Private investments of \$286,000 a year for development in lead and zinc mines are intended to increase lead output to 122,000 tons a year and zinc to 89,000 tons.

If new mines at Djebilet, Taroudant and in the Middle Atlas can be brought into operation soon enough, it is hoped to increase production of both lead and zinc by a further 3,500 tons a year each. At present, 86 per cent of Morocco's lead comes from the three main mines at Bou Bekar, Touissit and Aouli-Mibladen.

Of the six cobalt mines in operation before World War II only two are still being exploited: at Bou Azzer and Aghbar. The record output was reached in 1952 with 9,136 tons of ore at 12 per cent, but by last year the figure had dropped to 7,000 tons. Sold in France and Canada, the ore was priced 30 per cent higher than on the world market. Improvements during the current plan are expected to reduce this price and increase production by a third.

Most of Morocco's iron ore comes from the Ait Amar mine although deposits are numerous elsewhere in the territory. Production reached the 500,000 ton mark in 1953, and during the plan it will be maintained at this level. In fact production will be pegged because the demand for the low-grade ore available is strictly limited at present.

BRPM prospecting for copper ore will be concentrated on the deposits discovered at Bou Kesour and Djebel Klakh east of the Atlas and Ouinein in the High Atlas south of Marrakesh. Within the framework of the current plan a pilot tungsten mine will be opened up at Hassiane ed Diab and, if tests are favourable, the mine will be developed with the investment of \$286,000 supplied partly by the BRPM. Plans are also being studied for the expansion of the asbestos mining industry with a view to stepping up production by approximately 3,000 tons.

Finally, efforts are to be made to modernize antimony mines. Before World War II, some 20 deposits were worked with fairly primitive methods which made the sale price uneconomic. From 1,742 tons in 1951, production dived to 106 tons in 1953, rising again last year to about 700 tons. Plans include the building of a cleaning plant capable of treating 1,000 tons of ore a year.

Rapid Shaft Sinking Methods at Vaal Reefs

The No. 1 Ventilation Shaft of the Vaal Reefs Exploration and Mining Company has been sunk rapidly by the application of improved shaft-sinking techniques and by the careful dovetailing of all subsidiary work associated with shaft-sinking. The following article, adopted from *Optima*, Vol. 5, No. 2, a quarterly review published by the Anglo American Corporation of South Africa, describes the methods used at Vaal Reefs which resulted in a new world record for shafts of this particular type.

Remarkable speeds have been achieved in sinking No 1 Ventilation Shaft of the Vaal Reefs Exploration and Mining Company. In January this year the shaft was sunk 590 ft., which is equivalent to just over 19 ft. a day in the 31 days of the month, or 22½ ft. a day after allowing for various interruptions (cutting a pump chamber, long-hole drilling and treating water fissures) totalling 4½ days. In the 28 days of February the shaft was sunk 560 ft. (an average of 20 ft. a day). In March the shaft was sunk 667 ft., which represents 21½ ft. a day over the 31 days, or 22½ ft. a day after allowing for an interruption for one day during which a pump chamber 35 ft. long was cut and walled.

The shaft-sinking crews have thus set up a new world record for a concrete-lined circular shaft 18 ft. in diameter, from which the broken rock is being "lashed" (loaded into kibles) manually. The total footage sunk in the quarter January-March, 1955, was 1,817 ft., or an average of 606 ft. a month, which exceeds the previous world record of 597 ft. accomplished by mechanical cleaning.

SINKING FUNCTIONS INTEGRATED

The reasons for these high rates of shaft-sinking are twofold: first, they reflect the constant improvement in the technique of sinking this type of shaft in recent years; and, secondly, full benefit has been derived from the latest methods by carefully dovetailing all the subsidiary work associated with shaft-sinking. It is believed that this is the first time that these subsidiary functions have been virtually completely integrated with the primary functions of shaft-sinking.

In some of the shafts of other new gold mines where high rates of sinking have been achieved recently, time was saved by using mechanical methods of lashing, more powerful hoists (of 3,000 to 4,000 h.p.) and larger kibles (5½ to 7 tons). At the Vaal Reefs shaft, however, only one 960 h.p. double-drum kibble hoist was used with 2½ ton kibles, and, in order to achieve high-speed sinking, it was necessary to streamline all the various operations into a smooth flow of work.

Although a circular, concrete-lined shaft has certain advantages over a rectangular, timbered shaft, it had the big drawback, until comparatively recent years, that sinking operations had to be stopped while the concrete lining was being poured. Before concrete could be poured, it was necessary to set the curb ring (a sort of mould for the base of the section of concrete) on the broken rock at the bottom of the shaft, and erect shuttering, brought down in small sections from the surface.

Concrete was then poured between the shuttering and the walls of the shaft to form a lining from about 30 to 60 ft. high. The sections of shuttering then had to be dismantled, and hoisted up the shaft before sinking could be restarted two to four days later. As the shaft was deepened, this process had to be repeated each time a new section of lining was cast.

There were various improvements in technique from time to time. One of the most radical changes was an arrangement for suspending the curb ring 30 ft. above the bottom of the shaft, which left the shaft bottom clear for sinking at all times. But as concrete was lowered down the shaft

in buckets, pouring could take place only during the drilling shifts, when the hoist was not being used for taking broken rock out of the shaft.

This difficulty was overcome a few years ago by delivering concrete not by lowering it in buckets by means of the hoist but by pouring it through a pipe 6 in. in diameter. By this means, sinking operations—that is, removal of broken rock and drilling in preparation for the next blast—could continue without interruption while concreting operations were in progress.

These improved techniques are being used in sinking the ventilation shaft at the Vaal Reefs mine, and the record speed of sinking reflects not only the elimination of interruption of other work during the pouring process but—no less important—the efficiency with which the various operations are integrated.

The curb ring is suspended from the sinking stage about 30 ft. above the bottom of the shaft. Level with the curb ring is the lower deck of the sinking stage. The stage is so constructed that kibles can pass through it on their way up and down the shaft in the normal process of taking broken rock to the surface. Circular shuttering is lowered by means of four winches and concrete is then poured behind the shuttering through pipes from the surface, thus forming another section of the concrete lining round the walls of the shaft. By means of a carefully worked out routine, the time taken to lower and reset the circular shuttering has been reduced to a minimum, and it has been possible to place the lining at a rate of 30 ft. in four hours within the 36 hours taken to sink the shaft by that amount. This high rate of concrete lining has allowed more time for the other functions, such as the drilling and fixing of clamps and brackets, extending air, water and concreting columns, ventilation ducting and cementation equipment (for cementing water fissures), and lowering cables.

When buckets were used to pass concrete down a shaft having only one hoist, pouring could, as already pointed out, be done conveniently only during the drilling shifts. This meant that the rate of sinking had to be adjusted to suit the rate of placing the concrete lining. As the hoist is no longer used for conveying concrete down the shaft, the process of lining the shaft is independent of the duration of the drilling shift, and sinking operations can proceed unhindered at maximum speed.

ECONOMICAL WORKING ROUTINE

The various parts of a working cycle from one blast to the next have been fitted into an economical routine that facilitates a high rate of shaft-sinking. About half an hour after a blast, the crews are able to enter the shaft again. The curb ring and associated equipment is lowered into position, and then lashing and pouring cement for the next section of lining starts simultaneously. The lining operations, lasting for 3 hr. 50 min., were completed during the lashing shift while the crews were working on a cycle of three 8-hr. periods, but continued into the "blowing over" (cleaning up) period and part of the drilling shift when a cycle of four 6-hr. periods was worked, as in March, when, owing to hard ground, the advance per shift was shortened from 7½ to 5½ ft. While drilling is being completed, the concreting equipment is raised up the shaft, and while the drill holes are being charged up, the sinking

stage is raised well clear of the blasting area. The next blast then takes place, and the whole cycle is repeated.

On the surface, the broken rock is received with similar efficient routine. The rock is transferred from each kibble as it comes to the surface direct into leakproof, 4-ton, side-dumping trucks, which remain coupled to light locomotives throughout the lashing periods. Three such units are used, working in rotation over a short distance between the shaft and a transfer bin. Five 1-ton cars, constantly coupled to another light locomotive, then carry the rock from the transfer bin to the rock dump. To keep pace with the work of lashing at the bottom of the shaft, kibbles were being hoisted and tipped at the rate of one every 2½ min.

Another factor of great importance in sinking a circular shaft rapidly is that the holes drilled into the bottom of the shaft must be placed very accurately; a small protrusion of rock from the sidewall, left there after blasting incorrectly placed holes, may be sufficient to foul the shut-

tering or the sinking stage and thus cause serious delays. To avoid this possibility, the correct drilling positions are indicated by means of a device pivoted on a centre pin equipped with a universally-jointed arm and drill-guides to position the outer and inner holes; chains suspended from the arm indicate the positions of the intermediate holes. Drilling takes place in a definite pattern, and all machines start and finish at about the same time. Thus the time allocated to drilling is used to the best advantage.

In lashing, too, effort is concentrated. The whole lashing crew fills one kibble at a time—the next kibble to be hoisted—instead of dividing its efforts between two or more kibbles. The positions of the crew are varied from time to time to keep the level of broken rock even across the shaft.

By careful direction of effort, much time can be saved in shaft-sinking, and the cost per foot, and thus the overall cost of the shaft, can be reduced. This, in turn, means that capital is saved during the unproductive stage of a new mine's life.

Optimistic Outlook for Iron and Steel

Despite the temporary setback of the recent rail strike and the expenditure required to expand ore carrying capacity under its own control, the U.K. iron and steel industry reports rising output and is planning increased production in the near future. In the following article, from our Iron and Steel correspondent, these matters are discussed fully and the article concludes with a brief description of the planned expansion of the iron and steel industry in India.

Against the paralyzing effects of a rail strike the steel industry can oppose no really effective defence. It was of little avail that the country had ample warning of the event. Possibly there were many who refused to believe that the footplate men would put their threats into operation, but industry could do nothing to avert the calamity and little to mitigate its dire effects.

Coal is by far the heaviest load carried by the railways and the electricity, gas and steel industries usually have in hand two to three weeks' supply. Nor could these reserves be increased in the prevailing conditions.

Under these circumstances, it was a surprising fact that the steel makers were able to survive the first week of the strike with so small a shrinkage of output. Most of the big producing plants were able to keep running at a reduced tempo and by the hasty mobilization of fleets of road vehicles, deliveries of coal, ore, and scrap were maintained at a high level. But all the plants were reduced to a hand to mouth basis of operations, and whilst it is still impossible to attempt final estimates, the loss of production, at a time when demand had reached its highest peak, cannot fail to exercise serious and far reaching effects.

Not only have deliveries of urgently needed material to the shipyards, motor works and engineering shops been held up, but an accumulation of steel at the docks, which is the direct consequence of the dock strike, tells its own tale of frustrated exports.

FAVOURABLE U.K. PRICES

At the end of last month, a few minor changes in the price of wire rods were authorized by the Iron and Steel Board but the further revision of iron and steel prices is apparently delayed. Exactly one week after the beginning of the rail strike, advances of 7½ per cent in railway freight charges came into operation. The effect of these extra charges will no doubt be reviewed by the Iron and Steel Board which has assumed the authority to determine the maximum prices for home sales. No decision has yet been reached, but a recent comparison of British and foreign prices, issued by the Board indicates such a wide margin

in favour of British steel that any small advance which may be sanctioned would still leave the British steel industry in a strong competitive position.

In point of fact, overseas buyers are paying substantial premiums for British steel and it is not the least lamentable consequence of the loss of output that there may have to be a further restriction of steel exports to ensure adequate—or rather less inadequate—supplies to home industries.

OVERALL EXPANSION OF PRODUCTION

In the recently published report of the Iron and Steel Board, which covers the period from July, 1953, to the end of 1954, it is indicated that ingot production this year is expected to reach 19,500,000 tons rising to 22,500,000 tons in 1957-58. The possibility of extending these figures and of obtaining the necessary raw materials to do so is under constant review.

The large-scale expansion of sheet mill capacity to meet the swollen requirements of the motor industry has already been approved, and a further project for the provision of an entirely new mill which, with all its ancillaries, may involve a capital outlay of as much as £100,000,000, is deferred for further consideration.

The provision of very much larger supplies of iron ore, as the first step to the expansion of pig iron production brooks no delay. Although requirements have increased, imports of foreign ore in the first four months of this year were rather below last year's figures. Last year more than 12,000,000 tons were imported and it is hoped to exceed that figure during the current year by about half a million tons, rising to an optimum of 17,000,000 tons in 1957-58.

From traditional and new sources, notably Labrador and French West Africa extra supplies are available, but in recent months the steel industry has encountered difficulties in keeping pace with the ore import programme because of the heavy traffic in coal across the Atlantic and the consequent shortage of dry cargo space for other commodities. Present indications are that our dependence on American coal next winter will be no less and may possibly be still greater, and it has just been disclosed that the British steel

industry has determined upon a vigorous expansion of ore carrying capacity under its own control.

Already five specially built ore ships of 8,500 deadweight tons each are in service, and the placing of orders for 13 more which was announced at the end of May, brings the total fleet of these specialized carriers delivered or on order to about 40 with a deadweight capacity of 425,000 tons. Under consideration also is the building of other ore carriers with a capacity of 22,000 tons each, but the range of ports capable of accommodating these larger vessels is limited.

The movement in the direction of the use of special ships for this trade promises, however, considerable advantages in the speedier handling of the vast bulk of ore now required and will, it is believed, justify the high capital expenditures involved.

Overseas, notable developments have been the further rise in American and German steel production, a 2.3 per cent rise in German steel prices, and the succession of Mr. Rene Mayer, a former French President, to the presidency of the High Authority of the European Coal and Steel Community. As long ago as last November Mr. Monnet, first president of the Authority, offered his resignation, but the choice of a successor has been delayed and, indeed, the retiring president had given some indication that he would be not unwilling to retain the post.

Mr. Monnet's ideas, however, appear to have been repudiated. He was believed to favour a much wider interpretation of the political and economic federation of Western Europe under a supra-national authority than was envisaged by the Coal and Steel Pool. With Mr. Mayer at the head it is expected that the policy of the High Authority will be more closely directed to the solution of the problems exclusively confined to coal and steel.

SELF SUFFICIENCY FOR INDIA

Meanwhile, special interest is centred upon the bold and vigorous plans of the Government of India to attain a position of complete self-sufficiency in steel. A first five-year plan, designed to raise production from 1,000,000 to 1,650,000 tons, is approaching completion and a second five-year plan, now in course of preparation by a special Planning Commission, envisages a much more spectacular expansion.

This is designed to raise productive capacity to 6,000,000 tons before 1962, and there has been a hint of a third five-year plan with a target figure of 10,000,000 tons. Whether these plans are too ambitious, whether there is a danger of redundancy, are questions too vast in their implications to be discussed in this article.

Suffice it to say that the large-scale expansion of the capacity of existing plants of the Tata Iron and Steel Co., the Indian Iron and Steel Co., and the Mysore Iron and Steel Co. have already made considerable progress. In addition, the German combine of Krupps Demag is building a new plant at Rourkela. This will be operated by Hindustan Steel Ltd., a Government-controlled concern, and the originally intended capacity of 500,000 tons has been doubled.

Under the Indo-Russian agreement, signed three months ago, Russia is to build a million ton plant at Bhilai and yet another plant of similar size is expected to materialize from the second British offer with which the Metallurgical Equipment Export Company is associated.

It remains to be said that India is well endowed with the mineral resources requisite for such vast enterprises, but the capital cost must be formidable and it would appear that large-scale foreign capital assistance will be essential to bring them to fruition.

Indian Steel Expansion

The constitution of a new Ministry of Iron and Steel was announced in an order issued recently at New Delhi by the President of India. Mr. T. Krischnamachari, Minister for Commerce and Industry, will be in charge of the new Ministry. This news is contained in a recent letter from our Indian correspondent who describes the expansion of the industry in detail.

At present the Rourkela steel plant, which is being established by a German firm, and the Bhilai steel plant to be set up by Russia, are being dealt with by the Ministry of Production. The Commerce and Industries Ministry is conducting negotiations with Britain for the establishment of a steel plant in Durgapur, in West Bengal. All the three steel plants will now be administered by the Ministry for Iron and Steel.

A Press note, issued by the Cabinet Secretariat, said that in view of the importance of the iron and steel industry and its development, the Government of India has decided to constitute a new Ministry for Iron and Steel. The new Ministry came into being on June 15. It will be in charge of Government industrial undertakings for the production of iron and steel and Government owned foundries.

THE THREE PROJECTS

An Indian team of experts will proceed to Russia later this year to examine the plant and machinery for the Russian-assisted steel plant project in Madhya Pradesh and study details before the project report is submitted in December this year. According to the agreed programme, the whole project has to be completed by 1959 and most of the important departments will be ready for operation by the end of 1958. The production programme is for 800,000 tons of finished steel, 200,000 tons of billets for sale and 100,000 to 200,000 tons of pig iron for sale.

The British Steel Mission have told the Government of India that Durgapur in Bengal has decided advantages over other sites. The suggestion of the Ministry of Commerce and Industry to produce end products (light structurals, wheels and axles) has been welcomed by the mission. They feel that the production of these items will not only be feasible but also economical in a plant of 1,000,000 tons ingot capacity.

At present only the Tata Iron and Steel Company are producing these items and that too only in a limited way of about 30,000 tons, while the nation-wide demand is in the region of 70,000 tons. Therefore, in the proposed British steel plant, provision will be made to produce 40,000 tons annually of these important items to meet the shortfall.

Meanwhile, the mission has submitted a preliminary report to the Minister for Commerce and Industry. The mission has left for the United Kingdom. It has been asked to work out estimates of capital costs, not merely on the basis of scale of output, but also of efficiency and economy in operation. The proposed steel plant will probably be a State enterprise for India, but on the British side it will be private industry which will set up and supply the plant. The United Kingdom Government will guarantee and enter into agreement to assist the deferred payment for the plant.

Hindustan Steel Ltd. has decided to work the iron ore deposits in Taldih to meet the requirements of the projected steel works at Rourkela. Investigations on the deposits at Taldih carried out by the Indian Bureau of Mines have shown that the area contains approximately 20,000,000 tons of iron ore of an average iron content of 65 per cent up to a depth of 66 ft. from the surface.

TECHNICAL BRIEFS

Aluminium Coating of Steel

Numerous processes for coating steel with aluminium have been developed, but most of them are said to be awkward, costly, or limited as to range of application. The Aldip Process, patented by General Motors Corporation, United States, reportedly overcomes these drawbacks, and produces a tight, non-rusting, heat-resisting coating on iron and steel surfaces, according to a notice in *Modern Metals*.

In the Aldip process a number of alternate steps can be taken in preliminary cleaning, the choice depending largely on the type of material and the degree and type of surface contamination.

For example, cast iron with carbon smear or hot-rolled steel with embedded mill scale are cleaned in an electrolytic molten caustic salt at 900 deg. F., followed by neutralizing in acid and water washing. Welded structures with very thick oxide or entrapped flux are also cleaned this way if sand blast treatment is impractical. In addition, fabricated parts which are relatively clean can be degreased and coated without preliminary treatment. Heavily rusted steel must be acid pickled, but superficial rust formation will be dissolved in the preheating and fluxing bath.

The molten salt bath for preheating and fluxing is maintained between 1,300 and 1,325 deg. F. in an electrode furnace lined with special ceramic brick. This bath contains molten aluminium at the bottom of the pot. A stirring apparatus mounted on the furnace maintains uniform temperature in the molten aluminium. Preheated and fluxed parts can be dipped in the molten aluminium beneath the salt in this furnace or transferred to a low frequency induction furnace containing aluminium.

Measurement by Density Gammagage

The Density Gammagage, developed less than a year ago, has already proved its efficiency in such diverse fields as an asbestos plant, an oil refinery and a metal ore mill. The instrument is described in *Canadian Isotope Newsletter*, a monthly bulletin, published by Isotope Products Ltd., Ontario.

This isotope instrument measures density of fluids in the same way, and with the same high accuracy, that other isotope gauges measure sheet materials. The density gauge employs very penetrating gamma radiation from a cobalt 60 source to probe through tank or pipe walls and determine the density of fluids inside.

The versatility of this instrument, and the degree of production control it makes possible, are demonstrated by three comparatively recent installations. In all three cases the same basic instrument has been used but the installation has been modified to meet specific industrial demands. In each case the gamma source is one curie of cobalt 60 which provides 1.2 mev radiation. The detector unit is an ionization chamber (4 in. long, 2½ in. dia.) filled with the inert gas argon under 200 p.s.i. pressure. The small electrical signal from the detection chamber is transmitted through a low impedance cable to the control cabinet. Here the signal is balanced against the signal from a second, or "internal" source—detector combination.

The balancing source is thallium 204 which requires less shielding in the control cabinet. The signal it imparts to the internal detector is balanced against the signal from the outside detector when the instrument is "zeroed."

In the asbestos plant, the density gammage is installed on a machine producing asbestos pipe from sheet. The asbestos sheet is formed on a rotating cylinder in a box that contains a slurry of cement and asbestos fibre in water. The isotope instrument measures density of the slurry in this vat box.

Since the box is 15 ft. wide, it was impractical to locate the source and detection heads on opposite sides of the tank. The amount of radiation spanning such a distance would have been too low to give measurements of high accuracy. Two agitators are mounted on shafts running through the sides of the vat box and the cobalt source was inserted into one of these shafts. The source capsule is less than a ½ in. in dia. and the whole source assembly was inserted in a ½ in. rod. Normally the liquid in the tank provides adequate shielding of the rays. But when the tank is emptied for maintenance the source is retracted into a lead block, 3 in. in dia., located inside the agitator shaft.

In this application the density gauge is measuring the percentage of solids in the slurry. The gamma rays are beamed through 11 in. of slurry and a ½ in. steel wall. The solids content is about eight per cent and the gauge enables this content to be maintained between seven and nine per cent. Prior to installation of the density gauge, considerably wider fluctuations occurred. For example, when the gauge was first installed it showed that the solids percentage was following a regular cycle. This was dependent on whether the hopper supplying the solid feed was full or nearly empty. The gauge has also shown that a faster machine speed is possible without any deterioration in quality. This asbestos machine will shortly be put on fully automatic control with the density gauge regulating operation on the basis of a three-point measurement.

The ore mill installation involved no special modifications. The cobalt source, contained in its normal 150-lb. lead case, and the detector unit are mounted on opposite sides of an 8 in. dia. pipe is measured by the instrument. This material is a 45 per cent (by weight) suspension of ground ore in water. The slurry at its point of measurement is en route from a spiral classifier to a flotation cell. The density gauge in this installation provides automatic control to the process.

The refinery installation involves measurement of per cent solids in an air suspension rather than of a liquid slurry. Here the density gauge is installed at a cat cracker on a pipe which carries spent catalyst from the reactor to the regenerator. Catalyst particles at 900 deg. F. are carried along in an air stream, with overall bulk density at about 35 lb. per cu. ft. To keep this catalyst flowing smoothly, it is important that a proper density gradient is maintained along the pipe. In this case the source and detector heads are mounted on opposite sides of a 26-in. pipe.

Embrittlement of Titanium

The embrittlement of titanium by hydrogen is a subject of great interest to the titanium industry and is of critical concern to the aircraft industry. The serious nature of the problem was discussed at a technical meeting on Hydrogen Embrittlement in Titanium, held in the United States recently. In one of the unpublished papers presented at the meeting, I. Jaffee, chief of the non-ferrous physical metallurgy division of Battelle Institute, summarized work done at the Institute on the effects of hydrogen on the mechanical properties of titanium. This research was sponsored by the Watertown Arsenal.

Hydrogen embrittlement of titanium, first noted in experimental studies at Battelle, became a major production problem to the aircraft industry and the titanium producers in 1954. The Institute's earlier investigations are serving as a basis for understanding the problem and for the steps taken to correct the trouble. The Battelle investigations showed that the most dangerous conditions differed for alpha and alpha-beta alloys.

The alpha alloys are mass embrittled by hydrogen as shown by the increase in impact and notch sensitivity. Hydrogen embrittlement of alpha-beta alloys, on the other hand, is greatest when such alloys are deformed at very low strain rates. This suggests that hydrogen embrittlement occurs in this instance by a strain-ageing mechanism. Moreover, since the amount of hydrogen that will embrittle an alpha-beta alloy in tension at low strain rates was found to decrease as the testing temperature decreases, embrittlement may occur at even lower hydrogen contents than have been found in rupture tests at room temperature.

Mr. Jaffee pointed out that elements other than hydrogen, —oxygen, for example—can embrittle titanium and that such elements should certainly be taken into consideration. He suggested that the best policy is to reduce other embrittling factors as much as possible so as to provide the greatest tolerance for hydrogen, and to maintain hydrogen at the lowest level possible by control of starting materials and processing steps. Alpha-beta alloys with high tolerance for hydrogen appear possible. The Battelle work also indicated that aluminium additions are beneficial and that titanium-molybdenum alloys are especially tolerant of hydrogen. It thus appears reasonably certain that the hydrogen problem can be solved by proper alloy selections and quality control.

METALS, MINERALS AND ALLOYS

COPPER.—An odd difficulty appears to have arisen from the order of Mr. Flemming, director of the Office of Defense Mobilization, that consumers anxious to obtain copper diverted from B.D.S.A. inventories should deal direct with the producers. Hitherto, consumers have applied to the Department of Commerce, which has been in charge of releases, for permission to acquire copper, and producers have accepted these authorizations. Producers apparently do not regard Mr. Flemming's blanket ruling as entirely above legal criticism and believe that, without specific instructions as to how the copper should be disposed of, they are still bound by the terms of the contract. The producers' case is that all that has happened so far is that the Department of Commerce's authority to control releases has been cancelled and what has been created is not a new authority but a vacuum. Right or wrong, it is understood that the producers are not releasing the copper and that, therefore, some that would have gone out this month will not now be available till July.

It is difficult to believe that Mr. Flemming is not as competently advised on the law as the copper producers and it may be that the fear of the producers is of political rather than legal repercussion. The demand for previous releases of government-owned stocks has always exceeded what has been available, and as the copper cannot be put up to auction the producers must satisfy competing consumers, among them some of their own subsidiaries. They could hardly be blamed, in the circumstances, if they sought to wriggle out of a troublesome and thankless job through a loophole, real or imaginary, in the law.

Meanwhile, there is no lessening of demand and producers are already selling on a substantial scale July and August metal. With the holiday season coming on this would not normally be a time for heavy orders but it is believed that consumers are anxious to build up their inventories. What has undoubtedly strengthened the desire to build stocks is the fear that the copper industry may shortly be strike bound. Wage contracts almost throughout the copper mining industry expire at the end of June and there is still no report that any of the negotiations for fresh ones has reached a successful conclusion. Agreement is not essential before June 30 for work can continue without a contract but on that day the workers become free to strike if they wish and a strike ballot has been ordered. There is, of course, no demand for a guaranteed annual wage in the copper mining industry but the workers must inevitably be strengthened in their resolve to get a useful increase by the great victory of the automobile workers and with copper at 36 c. the industry is in an embarrassingly profitable state. Certainly the producers can afford an increase though it is equally certain that the industry cannot afford to build in costs so as to make 36 c. a normal price; albeit it is being said that the E. and M.J. price will not fall below 36 c. in 1955. What makes the problem even more difficult is the knowledge that a prolonged dislocation now might have catastrophic consequences for the industry.

An interesting note on the present situation in Chile, prepared for Bache and Co., has been published. It describes the American companies as "privately amazed" at the "enormous advantages" that have accrued to them from the new copper law, and as having a controlling influence in the new copper department. Bache and Co., of course, are not without some interest in the matter and it certainly seems that the position of the independent merchants in Chilean copper selling is temporarily at least equivocal. The note implies that there will be no place for the independent producers under the new law as it is being interpreted by the American companies and that all copper will be sold to the United States on a 36 c. Connecticut Valley basis since the companies will have no incentive to obtain bigger profits elsewhere, and will wish to serve their own domestic interests. The copper department has, however, power to supervise, and intervene in, all sales and it seems unlikely that the Chileans will forego easy profits in Europe if they are to be had. Nor is it likely that the American firms will wish to antagonize the Chileans by their selling policy, and they will certainly not wish to see the London price rocket as it would do if no Chilean copper at all came to Europe. There is no need yet for the independent merchants to think that clause of as little avail as the note implies.

Meanwhile, Chilean production in 1955 up to May 31 had reached 170,000 tons as against 115,507 tons in the same period of 1954 and it is entirely possible that Chile will regain the position of second largest producer for this year.

LEAD.—Lead has been a featureless market in the past week with demand good but not outstanding and with no foreseeable cause for a price movement either way. Government again

entered the market on June 13 to ask for deliveries to the stockpile by August 15. Hearings have been fixed for June 29 and 30 for Senator Goldwaters' bill to purchase monthly minima of 10,000 tons of lead and 15,000 tons of zinc for the stockpile till 200,000 tons and 300,000 tons have been collected respectively. Prices up to 16 c. per lb. for lead and 15.50 c. per lb. for zinc could be paid.

TIN.—After being decidedly dull for some months past the tin market in the United States has shown some signs of life in the past week. The commercial supply demand situation is unchanged but the market has shown some respect for the threatening situation in Singapore. It is not easy to get a clear picture of what is happening there because of the volatile characters of many who are involved in the situation but it is clear that Mr. David Marshall, the chief Minister, is receiving increasing support from moderate union leaders against the attempts of the People's Action Party to turn the present disputes into a general strike. The Singapore City Council Labour Unions Federation has also decided to take no part in the strikes. Nevertheless, it is officially stated that over 17,000 workers were on strike on June 15. There is no indication that the trouble in Singapore must necessarily lead to the Malayan mines but there are plenty of signs that the movement towards self-government could easily become tempestuous. It is this fear which is at the present time playing on the market since it is from Malaya that most of the increase in tin exports in 1954 originated. In the first quarter of 1955 tin production showed an increase of five per cent over the same period of last year.

It is mostly in response to this situation that spot tin crept up last week in London from £721 10s. per ton to £729 10s. per ton.

The other influence is the heavy demand for tinplate as a precaution against the possibility of labour troubles in the steel industry. The success of the motor car workers in winning a guaranteed annual wage has encouraged most unions and not least steel workers into pressing their demands with great vigour.

The American government has requested the Thai government to renew the tin agreement between the two countries and negotiations for a new contract are under way for the sale of tin at current market prices. Under last year's contract which ended in March Thailand supplied 2,400 tons to the United States.

Indonesian tin in ore shipments during April reached 2,853 tons against 1,805 in March.

ZINC.—The speculation that a price rise for zinc is imminent has continued in the United States and has been further reinforced by the announcement of new wage contracts at Ford and General Motors. Contracts have yet to be signed with the smaller car producers but these may take some time as it is believed that a guaranteed wage can only be granted if they arrange a joint fund. However, with the two giants settled that particular threat to the zinc market has been removed. There are still producers who are not happy about the prospects of a price rise; mine production the world over is still growing and would grow further under a price stimulus; furthermore the commercial recovery has been due almost entirely to its low price. Yet another factor is the current over-production of cars (over 8,000,000 a year at present output although less than 6,500,000 can be sold) which before the end of the year must decline. It is not clear how the producers will face up to this matter under their new wage contracts but some decline in the demand for special high grade zinc is inevitable although with General Motors and Ford still in fierce competition the decline may be put off for a month or two.

The industry must also be extremely concerned about wage demands by its own workers. At 12 c. per lb. there are still a number of mines closed and a larger number of others operating on fairly slight margins. Such prosperity as the industry has achieved in the last year has rested very heavily on stockpiling and this is always a precarious prop. Any substantial wage increase would be difficult for the producers to afford but in the present upsurge of American wages it is equally difficult to see how they can stand aside. Most contracts are due to expire on June 30 and a strike ballot has been ordered in case negotiations for new contracts are not successful.

Meanwhile, buying on the basis of 12 c. per lb. East St. Louis has been good although it has fallen slightly from last week's level when speculative purchasing was rather overdone. There has been keen interest in July metal deliveries for all grades reflecting the general boom conditions of the American economy. Oddly enough, although smelter stocks declined in May in total the stocks of special high grade actually rose from 6,599 to 7,519 tons. Prime Western on the other hand fell to 44,715 tons from 54,064 tons, which virtually accounted for the

total decline. Prime Western's demand reflects the housing boom (which is causing some concern) and the deliveries of galvanized sheets during April at 239,001 tons set an all-time record.

Hearings have been fixed for June 29 and 30 for Senator Goldwaters' bill to purchase monthly minima of 10,000 tons of lead and 15,000 tons of zinc for the stockpile while 200,000 tons and 300,000 tons have been collected respectively.

ALUMINIUM.—South America's largest aluminium plant built by the Companhia Brasileiro de Alumínio has been brought into production. The new plant which was financed by 10 per cent contribution from government funds and the remainder from Brazilian private capital will produce 50,000 tons a year when fully completed.

ASBESTOS.—According to the Philadelphia organ, *Asbestos*, the industry has experienced an increase in tempo and demand during the early months of the current year. Generally speaking, the turn-over is running about 7 to 10 per cent above last year while all grades are in reasonably good supply. Noticeable increases have developed in the use of asbestos fibre in the friction materials industry, as well as in asbestos cement products.

MAGNESIUM.—Production of primary magnesium in April amounted to only 1,859 s.tons which compares with 4,942 s.tons in March and 6,203 s.tons in April, 1954. This represents a decrease of 62 per cent from the March figures and has brought the output to its lowest point since early 1951. This sharp contraction, according to the Magnesium Association, was directly attributable to a stoppage of work at the Dow Chemical Company's Texas concerns.

NICKEL.—The International Nickel Company of Canada has arranged to finance the exploration and development of nickel deposits at Mount Davies, in the north west of South Australia. A special two year lease has been granted to a new private mining company known as South West Mining to explore the area. South West Mining was formed at the beginning of this month by Nickel Mines of Australia in association with "other interests."

When Falconbridge's new Fecunis Concentrator has been completed and is in commission monthly production from Falconbridge's own mines together with ores treated on behalf of other companies could reach £4,000,000 according to a recent report from Toronto. The present position is that the engineering work on the new concentrator is already well in hand and that the actual construction will, it is expected, commence later this year. The ultimate objective is an annual production of £55,000,000 which should be attained in 1960.

To enable New Caledonian nickel to be marketed at competitive world prices the General Council of the New Caledonia has approved modernization plans designed to raise the local nickel output to 10,000 tons metal per annum which will be sold at world prices. The plan involved an expenditure of more than 10,000,000 francs.

Greece has now approved \$2,500,000 loan for the development of the Larymna nickel project by the Greek Chemical Product and Fertilizer Company which will exploit the iron-nickel ore deposits and construct a plant for the production of ferro-nickel. The project was planned by this company in co-operation with Krupp of Essen and total costs are estimated at \$6,000,000 of which \$3,000,000 have already been spent on preparatory work.

PLATINUM.—The platinum market in New York continues firm reflecting the relatively small offerings to the market particularly from the Continent. Primary sellers continue to quote at \$77/80 according to quantity and dealers indicate a price range of \$76/77.

URANIUM.—New Mexico and Arizona Land Company has concluded a lease with Tidewater Associated Oil Company to search for uranium. Tidewater will select 250,000 acres of the 1,249,000 acres which the Land Company has available for lease. Much of the acreage held by the Land Company is said to contain rock formations that are producing uranium on other properties.

The London Metal Market

(From Our Metal Exchange Correspondent)

The copper market has been firm throughout the period under review, and it seems unlikely that there will be any recession in the London quotations until the dock strike is settled and the threat of a widespread strike against the American copper producers has disappeared. Demand on the Continent remains patchy with a number of buyers obviously expecting lower prices before they have to replenish stocks: in America

consumption continues at a high rate, but this may be affected by strikes on the consuming side of the industry. In the U.K. most works do not seem to have been affected by the rail strike, but their rate of purchasing may begin to slow down owing to the time of year and possible accumulation of end-products which they have not been able to get away.

The tin market this week has been very much more active than of late with prices rising to levels which have not been seen for some months, which has been caused partly by good general demand, partly by one of the exceptional Argentine purchasing orders, and partly by the situation in Singapore. The small contango which had developed recently once more disappeared, and some quarters consider that a small back-wardation will be re-established. On Thursday morning the Eastern price was equivalent to £746½ per ton c.i.f. Europe.

Demand for high-grade zinc continues, and it now begins to appear as though the supply of g.o.b. is only just sufficient to meet demands. The price has therefore shown a definite upward tendency with further talk of an increase in the American quotation. It is understood that very little metal was tendered to the U.S. Government in answer to their monthly enquiry.

The lead market continues to be featureless with supply and demand in almost exact balance on this side of the Atlantic. In the U.S. there still appears to be a slight surplus which is, however, taken up by government purchases.

Closing prices and turnovers are given in the following table:—

	June 9		June 16	
	Buyers	Sellers	Buyers	Sellers
Copper				
Cash	£340½	£341	£347	£349
Three months	£324	£324½	£336	£337
Settlement		£341		£349
Week's turnover		4,425 tons		2,575 tons
Tin				
Cash	£721	£721½	£729	£729½
Three months	£721½	£722	£729	£729½
Settlement		£721½		£729½
Week's turnover		545 tons		865 tons
Lead				
Current half month	£102½	£103	£102½	£102½
Three months	£102½	£103	£102½	£102½
Week's turnover		2,725 tons		3,975 tons
Zinc				
Current half month	£90½	£91	£91½	£92
Three months	£89½	£89½	£90½	£90½
Week's turnover		5,050 tons		4,455 tons

OTHER LONDON PRICES — JUNE 16

METALS

Aluminium, 99.5%, £163 per ton	Magnesium, 2s. 4d. lb.
Antimony—	Nickel, 99.5% (home trade)
English (99%) delivered, 10	£519 per ton
cwt. and over £210 per ton	Osmium, £27 oz. nom.
Crude (70%) £200 per ton	Osmiridium, £40 oz. nom.
Ore (60% basis) 22s./24s. nom.	Palladium, £6 12s. 6d./£7 5s. oz.
per unit, c.i.f.	Platinum, £27 10s./£29
Bismuth	Rhodium, £40
(min. 2 cwt. lots) 16s. lb.	Ruthenium, £16 oz.
Cadmium (Empire) nominal	Quicksilver, £108
Chromium, 6s. 5d./7s. lb.	ex-warehouse
Cobalt, 21s. lb.	Selenium, 43s. nom.
Gold, 251s. 1d.	per lb.
Iridium, £30 oz. nom.	Silver, 77½d. f.o.z. spot and
Manganese Metal (96%-98%)	77½d. f.d
£255/£265 according to	Tellurium, 15s. lb.
quantity	

ORES, ALLOYS, ETC.

Bismuth	60% 8s. 3d. lb. c.i.f.
Chrome Ore—	20% 3s. 3d. lb. c.i.f.
Rhodesian Metallurgical (semi-	
friable) 48%	£13 per ton c.i.f.
Refractory 45%	£13 per ton c.i.f.
Small 42%	£10 2s. 6d. per ton c.i.f.
Magnesite, ground calcined ..	£26-£27 d/d
Magnesite, Raw ..	£10-£11 d/d
Molybdenite (85% basis) ..	105s. 3d.-108s. 1d. per unit c.i.f.
Wolfram and Scheelite (65%) ..	240s./245s. 6d. c.i.f.
Tungsten Metal Powder ..	19s. 9d. nom. per lb. (home)
(98% Min. W.)	
Ferro-tungsten (80%-85%) ..	16s. 9d. nom. per lb. (home)
Carbide, 4-cwt. lots ..	£37 6s. 3d. d/d per ton
Ferro-manganese, home ..	£53 17s. 6d. per ton
Manganese Ore Indian c.i.f.	
Europe (46%-48%) ..	80d./81d. per unit
Manganese Ore (38%-40%) ..	67d./69d. per unit
Brass Wire ..	3s. 2½d. per lb. basis
Brass Tubes, solid drawn ..	2s. 7½d. per lb. basis

THE MINING MARKETS

(By Our Stock Exchange Correspondent)

The stock markets last week were good and business was maintained at a high level. Investors, anticipated the settlement of the rail strike, and better news from the docks. In this they were assisted by excellent returns from Metal Box and Nylon Spinners.

The end of dealings for the old account did not restrict the Kaffir market, prices forged ahead on strong demand from Johannesburg. One reason for this is the better native labour figures with 12,000 more men at work than during the corresponding period last year. Many of the June dividends were uninspiring but most of the leading finance houses went ahead well. Consolidated Mine Selection were singled out by continental buyers and Consolidated Goldfields moved upwards supported by the good results from properties in its group. Johannesburg Consolidated were also a feature despite mixed dividend results.

Among individual Rand mines the strong demand for Klerksdorp area properties and the improvement in uranium producers was noticeable, the latter were encouraged by the maintained dividends from Randfontein and West Rand Consolidated. The difficulties of some of the older mines were shown by the failure of Springs and City Deep to pay dividends. In the latter case, the capital expenditure programme probably accounts for this lapse after an unbroken record of twenty-one years. Recent reports also announce a fire at the property, this took place in one of the older areas which is being reopened. The dividend results brought about advances in Vogelstruisbult and West Driefontein, and all the young developing Klerksdorp mines showed substantial gains.

There was rather less interest in the Orange Free State but this group also benefited from the improved tone. The lack of further news from Free State Geduld No. 2 shaft was taken as a good omen and the shares advanced strongly. The company has extensive pumping apparatus already available at the property. Buyers appeared for St. Helena which again went ahead.

in late dealings. President Steyn were undeterred by the one for ten new issue which is being made to existing shareholders at 35s.

West Africans and West Australians recorded few changes although the tone in both markets was steady. The one outstanding feature was Lake View and Star. A sharp advance in these shares was accompanied by vague rumours that the company might emigrate.

In the diamond share market, prices generally showed a slight improvement, but there was relatively little activity despite the satisfactory gem and industrial stone sales figures.

Among coppers the improved tone was maintained and Nchanga were an outstanding feature after the increased dividend. There was also considerable activity in Bancroft which at one time touched 44s. Hopes of a satisfactory progress report from the Kansanshi property caused a rise in Rhodesia Katanga. Profit taking lowered Selection Trust.

Eastern tin shares responded to the metal price which remains at a satisfactory level. While there were few spectacular advances, most of the leading shares gained the turn. In the Nigerian group, the larger companies gained ground, particularly Amalgamated Tin. The two investment trust, London Tin and British Tin Investment, continued last week's advance.

In the lead/zinc market, there was some activity among Barriers which mostly finished the week unchanged. Mount Isa, however, again consolidated ground gained. The company's activity in the copper field probably accounts for this.

Consolidated Murchison are paying a higher interim dividend but the shares fell back due to liquidation by some optimists. Associated Manganese passed the interim dividend due to the shortage of rail transport which has restricted the movement of ore from the property, in spite of this the shares were slightly firmer.

Finance	Price June 15	+ or - on week
African & European	3½	+ ½
Anglo-American Corp'n.	8½	+ 1
Anglo-French	21/6	+ 1/-
Anglo Transvaal Inv.	27/6	.....
Central Mining (Cl shrs.)	43/6xd	+ 2/6
Consolidated Goldfields	61/3	+ 1/10½
Consol. Mines Selection	40/-	+ 3/9
East Rand Consols.	2/4½	+ 1/-
General Mining	3½	+ ½
H.E. Prop.	9/6xd	- 4½d
Johnnies	39/-	+ 2/6
Rand Mines	3½	+ 1
Rand Selection	44/4½	+ 3/9
Union Corporation	42/-	+ 3/6
Vereeniging Estates	47/6	.....
Wits	47/6	+ 6/3
West Wits	41/6	+ 1/-
Rand Gold		
Blyvoor's	30/3	+ 1/3
Brakpan	6/9	+ 6d
Buffelsfontein	37/3	+ 3/3
City Deep	10/6	- 1/6
Consol. Main Reef	23/3	+ 1/4½
Crown	48/9	+ 7½d
Daggas	58/13	+ 1/3
Dominion Reefs	34/9	+ 4
Doornfontein	26/7½	+ 10½d
Durban Deep	31/3	+ 7½d
E. Champs	6/3	.....
E. Daggas	10/9	+ 3d
E. Geduld (4s. units)	30/6	+ 1/6
E. Rand Props.	3½	.....
Geduld	4½	+ ½
Govt. Areas	6/9	.....
Grootvlei	20/9	+ 3d
Hartebeetsfontein	37/6	+ 5/-
Libanon	8/6	+ 1½d
Luiipaards Vlei	22/-	+ 1/3
Marielave	20/9	+ 6d
New Kleinfontein	7/3	+ 3d
New Pioneer	15/3	+ 1/6
Randfontein	51/6	+ 5/-
Robinson Deep	18/9	+ 1/-
Rose Deep	13/6	.....
Simmer & Jack	3/9	+ 1½d
S.A. Lands	25/-	+ 7½d
Springbok	2/4½	+ 1½d
Stilfontein	28/3	+ 6d
Sub Nigel	40/-	+ 1/3
Vaal Reefs	34/6	.....
Van Dyk	3/6	.....
Venterpost	13/6	+ 3d
Vlakfontein	17/3	+ 3d
Vogelstruisbaai	32/-	+ 1/3
West Drifontein	5½	+ 1
Wand Gold contd.		
Rand Consolidated	47/6	+ 4/4½
Western Reefs	42/6	+ 3/9
O.F.S. Gold		
Freddies	3/9	.....
Freddies Consolidated..	5/7½	+ 1½d
F.S. Geduld	4½	+ ½
Geoffries	16/3	+ 6d
Harmony	35/6	+ 1/6
Lorraine	9/1½	+ 1½d
Lydenburg Estates	21/-	+ 2/3
Mariespruit	11/-	+ 4½d
Midland Wits	18/6	+ 1/6
Offits	3½	.....
President Brand	71/3	+ 3/1½
President Steyn	36/9	+ 2/3
St. Helen's	30/6	.....
Virginia Ord.	14/9	+ 9d
Welkom	20/3	+ 2/6
Western Holdings	4½	+ ½
West African Gold		
Amalgamated Banket	2/4½	+ 1½d
Ariston	6/6	.....
Ashanti	23/9	- 3d
Bibiani	4/7½	- 1½d
Bremang	1/4½	.....
C.C. Main Reef	3/3	- 1½d
Konongo	3/-	- 1½d
Lyndhurst Deep	1/3	.....
Marlu	2/3	.....
Taqaah	1/3	.....
Western Selection	10/9	+ 9d
Australian Gold		
Gold Mines of Kalgoolie	13/-	.....
Great Boulder Prop.	10/3	+ 1/3
Pataching	19/-	+ 3d
Lake View & Star	19/-	+ 3d
Mount Morgan	7/6	+ 6d
North Kalguri	5/3	+ 3d
Sons of Gwalia	9/1½	+ 1½d
Western Mining	9/1½	+ 1½d
Miscellaneous Gold		
Cam & Motor	8/9	+ 1½d
Champion Reef	7/9	- 1½d
Falcon Mines	7/-	- 6d
Globe & Phoenix	23/6	.....
G.F. Rhodesian	7/-	+ 10½d
Metapa	1/6	+ 1½d
Mysoor	4/3	.....
Nundydroog	6/-	+ 3d
Ooregun	4/6	.....
St. John d'El Rey	12/-	- 6d
Zams	49/4½	+ 1/10½
Diamonds and Platinum		
Anglo American Inv.	9½	.....
Casts	26/1½	+ 1/4½
Cons. Diam. of S.W.A.	6½	.....
De Beers Deft. Healer	16/-	.....
De Beers Pfd. Healer	8/6	+ 3d
Pots Platinum	14/6	+ 1½d
Waterval	14/6	+ 1½d
Copper		
Bancroft	42/6	+ 2/3
Chartered	61/3	+ 3/9
Espérance	4/6	+ 1½d
Messina	8½	.....
Nchanga	15	.....
Rhod. Anglo-American	104/3	+ 3d
Rhod. Katanga	31/9	+ 1/3
Rhodesian Selection	28/9	- 4½d
Rhokana	39½	+ 1
Rio Tinto	61½d	.....
Roan Antelope	25/9	- 1½d
Selection Trust	7½	- 2/3
Tanks	7½	.....

COMPANY NEWS AND VIEWS

Half-Yearly Kaffir Dividends

The half-year dividend payments from Rand, Far-west Rand and Klerksdorp producing gold mines disclosed many decreases. The most prominent amongst these came from City Deep, which passed its distribution for the first time in over twenty years. Springs, also, was absent from the list after its return last December with an increased payment. Other notable decreases included Blyvoor, down by 1d. from the previous half-yearly payment, and Daggafontein which cut its dividend by 3d.

The overall picture was not, however, without its encouraging features. For instance West Driefontein raised its payment by 6d., while East Champ d'Or, as foreshadowed recently by the chairman in his annual statement to shareholders, paid 3d. This was its first distribution since June 30, 1953.

Company	Dec. 1953	June 1954	Dec. 1954	June 1955
Central Mining	s. d.	s. d.	s. d.	s. d.
Blyvoor*	1 4	1 2	1 2	1 1
City Deep	6	6	6	Nil
Consolidated Main Reef*	1 9	1 9	2 0	2 6
Crown	3 0	3 0	3 6	3 6
Durban Deep	1 9	1 6	1 6	1 3
E. Rand Prop.	1 9	1 9	1 9	1 9
Modder East*	1 6	1 6	1 6	1 6
Rand Mines	3 0	3 0	3 0	2 9
Transvaal Gold	9	6	6	6
Goldfields				
Libanon*	3	3	3	3
Luipaards Vlei*	7½	7½	7½	7½
Rietfontein Con.	1 4½	1 3	1 3	1 1
Robinson Deep	9	1 3	1 9½	1 6½
Simmer	4	3	5½	4
Sub Nigel*	3 9	3 9	3 6	3 6
Venterspost*	5	5	6	6
Vlakfontein	6½	6½	7½	8
Vogels	1 1½	1 6	1 6	1 7½
W. Driefontein*	9	1 3	1 9	2 3
Union Corporation				
East Geduld	1 9	1 9	2 0	2 0
Geduld	5 9	5 6	6 9	6 9
Grootvlei	1 1	1 0	1 1	1 1
Marievale	11	11	1 1	1 0
General Mining				
S. Roodepoort*	9	9	9	0 10½
Stillfontein	—	—	6	6
W. Rand Cons.	2 0	1 9	2 0	1 9
Anglo Transvaal				
Rand Leases*	3	4½	6	6
Village M.R.*	1 5	1 5	1 5	1½
Anglo American				
Brakpan	6	4½	6	4½
Dagga	3 0	3 0	3 0	2 9
E. Dagga	10½	9	9	9
S. A. Lands	1 6	1 3	1 6	1 4½
Springs	1½	Nil	2½	Nil
W. Reefs	1 3	1 3	1 3	1 3
Johannesburg Consolidated				
Government G.M.A.	9	7½	7½	4½
Randfontein	1 0	1 0	2 0	2 0
East Champ d'Or	—	—	—	3

* Companies ending their financial years in June.

† Including 6d. additional payment.

‡ Including 1½d. additional payment.

§ Including 3d. additional payment.

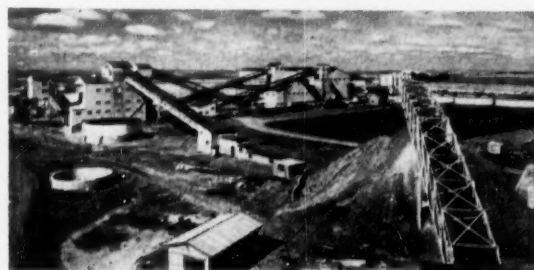
Sharp Rise in Nchanga's Profits: Higher Dividend

Profits earned by Nchanga Consolidated Copper Mines during the year ended March 31, 1955, advanced sharply from £14,218,000 to £16,361,940. With the recommendation of a final dividend of 17s. 6d. on the £7,000,000 one class capital in £1 units (equivalent to 28s. per unit before deduction of Rhodesian taxes) total net distribution for the year has been brought up to 22s. 6d. per unit from 20s.

The year's preliminary accounts allow for taxation at £6,180,000 (£5,376,000) and after sales equalization of £875,000 (Cr. £750,000) a balance of £9,306,940 (£9,592,000) remained. Net dividends absorbed £7,875,000 (£7,000,000) and capital expenditure amounted to £1,250,000 (£3,000,000).

Official Opening of Loraine

The official opening of Loraine Gold Mines, the new Orange Free State gold producer in the Anglo American Corporation group, is due to take place tomorrow. At this ceremony the traditional first bar of gold will be poured. It will be recalled that operations at Loraine started last month and a return concerning its initial milling published a few days ago. This disclosed that a total of 32,000 tons of ore had been crushed which represented a useful stride towards the presently envisaged milling capacity of 75,000 tons a month. Although no definite decision has yet been reached regarding the date by which it is hoped to expand these operations, a future target of 100,000 tons of ore monthly will eventually be aimed at. Besides its gold operations it has for some time been widely anticipated that Loraine will eventually become an important uranium producer. So far, however, only the official application for this purpose has been made to the Atomic Energy Board. The results of the Board's investigations on the property will, no doubt, soon be forthcoming.



General view of the reduction plant at Loraine Gold in the O.F.S.

P. Steyn Offers 1 for 10 at 35s.

An offer of shares in the proportion of 1 for every 10 held is to be made by President Steyn Gold Mining Company at a price of 35s. per share. In order to cover this issue, while at the same time making provision for the £1,840,000 shares over which Anglo American now intends to exercise its option, the issued capital of the company will be increased to 13,000,000 shares.

On completion of the new issue the total of 45,632 shares which will remain are to be subscribed by the Anglo American Corporation at a price of 35s. per share. A circular giving details of the offer will be posted to members on June 20.

Union Minière's Higher Profits and Dividends

It has been announced by The Union Minière du Haut Katanga that total profit available for distribution in respect of the year ended December 31, 1954, rose to 3,362,000,000 Belgian francs from 3,173,000,000 in respect of the previous year. Total dividends amounted to 1,600 frs. per share as against 1,450 frs. previously.

H.E. Prop's Saaiplaas Participation

In his statement to shareholders of the H.E. Proprietary, Mr. R. Ellerton Binns, chairman and managing director, referred to the company's participation in the Saaiplaas area of the Orange Free State in respect of which a mining lease has since been granted to New Consolidated Free State Exploration Company. Mr. Binns stated that in this mining lease would be included a proportion of South African H.E. Proprietary's (H.E. Prop's Subsidiary) Farm Welgegend No. 86 which company would therefore participate on favourable terms in the mining company to be formed to acquire the lease and work the area. Having regard, he said, to the fact that the interests of the respective participants would be defined by the whole lease area, South African H.E. Proprietary's participation and rights—both direct and indirect—were assured.

During the year ended December 31, 1954, group profits declined £181,440 from £207,607. From this figure taxation

took £106,985 (£120,779) and dividends absorbed £51,000 (£49,500). The balance carried forward fell sharply to £49,545 from £134,753. This was due mainly to a transfer of £100,000 to general reserve. The consolidated balance sheet as at December 31 revealed that quoted securities shown at the figure of £666,093 had a market value of £1,130,825. Current assets apart from investments exceeded current liabilities by some £330,000. Meeting, London, June 30.

Burma Corporation's Expansion Plans Reconsidered

The decision to construct additional plant to enable the expansion of mill tonnages at Burma Corporation have recently been the subject of some revision. As an alternative to the installation of new concentrating plant, therefore, investigations into the possibility of expanding existing facilities are now on hand. Moreover, the decision as to whether or not the projected capital plans should be proceeded with has been deferred pending the results of more intensive geological exploration. This, it is hoped, the corporation will be in a position to conduct in the near future.

Reflecting the growing proficiency of labour and operations in general at the mine, results published in respect of the quarter ended March 31, 1955, revealed a further increase in estimated operating profits to £221,933 from the previous quarter's total of £186,292. During the first nine months of the corporation's current financial year to June 30, 1955 the estimated net profit after deduction of taxation and depreciation estimates has risen to £237,960 from £158,880 during the previous corresponding period.

At this stage in the development of operations by Burma Corporation, the question of dividend distribution must naturally come under consideration. And while, in view of the published figures, there seems no doubt that last year's maiden distribution could be exceeded, it should be borne in mind that future capital expenditure will undoubtedly make large demands upon finances. On the other hand, the Corporation's balance sheet as at June 30, 1954, disclosed a most satisfactory liquid position. This amounted to about £2,000,000, a sum which would go a long way towards meeting requirements.

From the point of view of prospects for the shares of Burma Mines, the holding organization through which a quoted investment may be taken in the operating mine, it is naturally of the greatest importance that this company should pay a dividend soon. Public anticipation of this event has been amply demonstrated in recent months, the 3s. 6d. shares having risen from a low point of about 2s. 3d. to their present level of about 3s. 5d. since the beginning of the present year. Indeed, it would not be beyond the bounds of possibility for a token distribution to be made in respect of the current year. Emphasis, should, however, be placed upon the word "token" for on present earnings a dividend to fully justify the current price must, as yet, remain in the longer term future. Nevertheless, in view of the favourable outlook for lead, zinc and silver prices—the corporation's three main revenue earners—together with the production successes so far achieved, the full realization of the mine's potential may easily be attained, somewhat sooner than expected.

Progress at Klerksdorp Consolidated

It has been announced by the consulting engineers to Klerksdorp Consolidated Goldfields, Messrs Bewick, Moreing and Co., that "during the past quarter considerable progress has been made on the farm Rhenosterhoek No. 52 in prospecting for prescribed materials under the permission granted to the company by the Minister of Mines".

The announcement went on to state that two winzes, the North and South Winzes, are being sunk on the Upper Reef horizon of the Dominion Reefs Series. This horizon, tested underground by ratemeter was proving a constant carrier of radio-active material. The winzes, which were respectively 170 and 150 feet deep at the end of April, had not yet passed through the oxidized zone. In the South Winze, however, the development of the carrier band appears to improve as the depth increases. Construction work is continuing on the provision of electric power for hoisting purposes and at present progress is limited to the compressor capacity available.

Good Demand for C.P. Manganese Ore's Product

At the meeting of Central Provinces Manganese Ore, the chairman, Mr. H. R. Holmes, stated that there was at present a good demand for the company's ore. Prices were, however, lower than those obtainable in the exceptionally advantageous years of 1952 and 1953. But there was he said, another factor to be taken into account in regard to the future. This concerned

the opening up of other manganese areas in the world which would, no doubt, compete in course of time with ore supplies from existing sources. On the other hand, it had to be borne in mind that world steel production was continually expanding. Mr. Holmes continued by saying that as far as he could see at the moment prospects for the current year's trading were not unsatisfactory.

Kaduna Syndicate Pays More From Higher Profits

A higher total output of tin concentrates at 332 tons as against 327 tons during the previous year was reached by Kaduna Syndicate during the year ended December 31, 1954, and although this no doubt, contributed to a small extent to the very much higher profits earned, the main reason for so sharp an increase must await the annual report and accounts. Meanwhile a good guess would be that costs—recently checked after their rise in past years—have been brought down still further.

Year to Dec. 31	Total Profit	Taxation	Net Profit	Dividends	To Reserve	Carry* Forward
	£	£	£	£	£	£
1954	61,503	34,380	27,123	18,100	10,000	11,729
1953	34,987	21,765	13,222	13,200	Nil	12,764

* After crediting provision no longer required £221 (1953—£1,506).

In the preliminary profit statement published by the company it has been announced that a final dividend of 4½ per cent will be paid on the issued ordinary capital of £48,000 in 1s. shares. Total distribution in respect of the year has thus been raised to 66½ per cent from 50 per cent.

During the first five months of the current financial year a total of 123 tons of tin concentrates has been produced as compared with 112½ tons during the previous corresponding period. Mr. H. Vivian is chairman. Meeting, July 12, London.

Kaduna Prospectors: Drop in Production, Profits and Dividend

Due to the temporary suspension of work in the Werran river paddock, and to the cessation of production from old tailing dumps, output of tin concentrates by Kaduna Prospectors during the year ended December 31, 1954, fell to 70 tons from 116 tons previously. This was mainly responsible for the drop in profits earned.

Year to Dec. 31	Total Profits	Taxation	Net Profit	Dividends	To Reserve	Carry* Forward
	£	£	£	£	£	£
1954	6,846	4,123	2,723	2,833	1,000	3,079
1953	10,282	6,985	3,297	3,667	Nil	2,745

* Including taxation provision no longer required £1,444 (£125).

With the recommendation of a final dividend amounting to 16½ per cent, total distribution on the issued ordinary capital of £20,000 in 2s. shares has been reduced to 25 per cent from 33½ per cent previously.

During the first five months of the current financial year concentrates produced have totalled 28 tons as compared with 31 tons during the previous corresponding period. Mr. H. Vivian is chairman. Meeting, London, July 12.

Loan of up to £100,000 for S. Crofty Capital Expenditure Programme

Details have been announced by South Crofty, the Cornish tin and wolfram property, of the method which will be adopted to finance a capital expenditure programme designed to increase its milling capacity from 6,000 tons of ore hoisted per month to 8,000 tons. These arrangements reached between the company, Tehidy Minerals and Messrs. Williams Harvey, tin smelters, provide for a loan up to £100,000. This loan will take the form of a debenture issue redeemable at a premium of 5 per cent at the expiration of 10 years from the date of the advance. In consideration for making this finance available the two creditors will be given an option to subscribe for shares in cash at par on each occasion on which any further equity share capital is offered within the next fifteen years. Their proportion out of each 217 shares issued will be 100 shares on each occasion.

During the year ended December 31, 1954, crushing operations were considerably expanded and the output of black tin and wolfram was the best for the past ten years.

Despite these production achievements, the heavy expenses incurred under the old method of pumping, and those connected with switching over to and running-in the new electric pumps together with draining and accumulation of water amounting to over 125,000,000 gallons prevented profitable

operations. Moreover sufficient ore could not be worked to keep the mill running to full capacity. Accordingly the company again reported a trading loss of £18,144 (£65,626).

Year to Dec. 31	Ore milled Tons (000)	Grade* lb.	Recovered Black Tin tons	Recovered Wolfram tons	Arsenic tons	Dv't. F'tge. (000)
1954	60.5	22.2	590.6	8.8	32.3	6.7
1953	52.1	24.0	556.0	3.4	Nil	6.6

* Refers to Black tin and Wolfram recovered.

Note.—In addition a total of 7,780 tons (6,120 tons) were milled at Castle-Ap-Dinas. Wolfram recovered amounted to 59.25 tons (27.35 tons) equivalent to 17.06 lb. per ton (10.1 lb.).

The figure carried forward to the consolidated balance sheet was accordingly reduced to a debit of £22,377 from the previous credit of £2,634.

In his statement to shareholders, Mr. T. Pryor, the chairman, emphasized that although the company is not yet back to the dividend earning stage, it is definitely emerging from its troubles. At the end of last May six of the new electric pumps had been installed, and only one remained to be delivered. Moreover, during the four months January to April 1955, 21,574 tons had been crushed from which were produced 214.25 tons of black tin and 1.15 tons of wolfram. This was an improvement over the comparative figures for 1954 and providing nothing unforeseen occurred, said Mr. Pryor, results for the remainder of 1955 should show further increases.

Meeting, Redruth, Cornwall, June 29.

Southern Van Ryn Reef's Profits Expand

Dividends received, mainly from shareholdings in Stilfontein Gold Mining Company, amounting to £10,050 together with a net profit of £31,681 from the realization of investments were responsible for the sharp advance in the profits earned by Southern Van Ryn Reef Gold Mining Company during the year ended December 31, 1954. After expenses net profits amounted to £27,920 (loss £13,145) and the balance carried forward rose to £17,266 from the previous debit of £10,647. Reflecting the transfer during the past financial year of the company's holdings in Hartebeestfontein and Buffelsfontein Gold Mining Companies to the quoted lists of the Johannesburg and London Stock Exchanges, the market value of quoted investments was £992,168 (£760,267) as at December 31. Current assets exceeded current liabilities by over £55,000. Mr. Jack Scott is chairman. Meeting, Johannesburg, June 17.

Gold Fields Australian Reduces Accumulated Loss

A group operating profit of £22,693 as against £21,787 was made by Gold Fields Australian Development Company during the year ended December 31, 1954. The accumulated loss carried forward to the group balance sheet was accordingly reduced to £47,360 from £67,007. Mr. R. H. A. Neuschild is chairman. Meeting, London, July 1.

Lobitos' Capital Expenditure

An all time production record at 490,338 tons of crude oil was attained by the Peruvian Subsidiary of Lobitos Oil Fields during the year ended December 31, 1954. This figure compares with 461,225 tons in respect of the previous year and represents an increase of 6.3 per cent. In contrast with the experience of recent years, it was particularly encouraging that this increase was not only due to the Lobitos field but also to that of El Alto. Moreover the improved production did not come from any spectacular discovery but stemmed from a series of advantageous factors. The most important of these were the continued success of pressure maintenance and consequent lower rate of decline in the Lobitos field; continued concentration on the improvement of drilling completion and production methods, and the production department's efforts in the field of gas-lift and displacement pumping. These facts and figures were given by Mr. F. C. Bowring the chairman in his advance statement to shareholders prior to the meeting due to be held on June 20 in London.

Year to Dec. 31	Total Revenue £(000)	Tax- ation £(000)	Net Profit £(000)	Divi- dends £(000)	To Reserve £(000)	Carry* Forward £(000)
1954	2,578.8	879.3	869.4	237.0	528.1	889.2
1953	2,392.2	942.1	593.6	255.7	438.4	784.8

* After crediting profits less losses on investments of £9,927 and taxation surplus of £25,747. (1953 - £20,235 and £29,746 respectively.)

During the past financial year net operating income and sundry receipts rose to £2,501,183 from £2,326,436. Gross income from investments advanced to £77,647 from £65,789.

Dividends on the company's issued ordinary capital of £3,000,000 in ordinary stock units amounted to 14 per cent in addition to which a two per cent tax free distribution was made.

Mr. Bowring also referred to various items of capital expenditure which the company would have to meet during the next few years. Foremost amongst these was the rebuilding of the El Alto hospital and the erection of an ocean terminal at Callao for the storage of refined products for the local market. Although estimates have not yet been completed, a total of not less than £400,000 is likely to be required for both projects. In addition, an amount of £160,000 is to be expended on the installation of a new water evaporation plant while a new platformer unit costing approximately £300,000 will be erected at the Ellesmere Port refinery. Total commitments amounting to some £860,000 have thus been entered into by the company. But as current assets shown on the latest balance sheet exceeded current liabilities by some £3,800,000 no danger to future dividends would seem apparent.

Rise in Grade at Motapa

Despite an advance in working costs due mainly to a lower tonnage milled and the increased cost of electric power, a rise in grade by .394 dwt. of gold per ton at Motapa Gold Mining Company during the year ended December 31, 1954, brought total profits up to a level in excess of those of the previous year.

Year to Dec. 31	Tons Milled (000)	Yield Per Ton dwt.	Costs Per Ton s. d.	Devt.* F'tge. (000)	Ore Tons (000)	Reserve Value dwt.
1954	217.8	2.7	30 4	1.3	319.0	3.5
1953	243.2	2.3	27 8	2.1	336.0	3.5

* Refers to payable footage having a value of 3.6 dwt. over 9 ft. (1953—4.1 dwt. over 10.4 ft.).

During the past financial year investigations and plant modifications were continued and resulted in a further satisfactory increase in the percentage of gold extraction. This, together with a more selective mining policy made possible by the increase in ore reserve values at the end of 1953, enabled the milling grade to be raised.

Total profits earned during the year rose to £40,504 from £30,865. After all expenses net profit was £31,920 (£21,882). An amount of £32,352 (£16,932) was transferred to capital reserve and unappropriated profits carried forward were £18,293 (£18,725).

Mr. J. W. A. Wright is chairman. Meeting, Bulawayo, June 20.

Bid For Stream-Line Filters Discontinued

It has been announced by Stream-Line Filters that negotiations regarding the bid of 47s. 6d. for the 5s. shares of the company has been discontinued. No formal offer has therefore been made.

Pengkalan's Output Recovery

The fact that only about half of the area dredged by Pengkalen tin company for the year ended September 30, 1954, consisted of tailings on either side of the old river bed, as compared with two-thirds during the preceding year, had the greatest bearing upon the recovery of tin ore per cubic yard. As it was, the considerable drop in the volume of ground treated was more than offset by a very sharp rise in output due entirely to the yield per cubic yard having been virtually doubled.

Year to Sep. 30	Treated cu. yd. (000)	Per cu. yard Yield (lb.)	Cost (d.)	Output in tons (conc.)	Price rec'd. per ton
1954	1,983.9	.6	11.4	536.1	410.95
1953	2,260.9	.32	10.5	320.5	472.15

Dividends on the issued ordinary capital of £90,000 in shares of 5s. each were accordingly increased to 55 per cent from 30 per cent in respect of the preceding year.

Year to Sep. 31	Total Revenue £	Tax- ation £	Net Profit £	Divi- dend £	To Reserve £	Carry Forward £
1954	284,685	78,603	119,052	52,250	Nil	61,614*
1953	208,085	30,237	70,579	29,875	7,366	48,345

* After crediting £25,070 from taxation no longer required.

It is particularly encouraging to note in regard to the prospects for the current year that output for the first 6 months to March, 1955, at 235½ tons has been largely unchanged from that achieved during the previous corresponding period. Moreover, the company's general managers, Messrs. Osborne and

Chappel, foresee in the coming months a maintenance of this satisfactory rate of production.

At the present price of around 11s. 9d. Pengkalen 5s. shares stand to yield almost 23 per cent. In view of the company's past recovery, and satisfactory future outlook they would not at this price appears to be over-valued.

Union and Rhodesian Pays 1½d.

Net profit earned by Union and Rhodesian Mining and Finance Company during the year ended December 31, 1954, declined to £51,839 from £64,843. From this figure taxation absorbed £938 (£877) while provision for the dividend of 1½d. per share together with a bonus of ½d. amounted to £43,750 (£37,500). A total of £80,000 (£25,000) was transferred to investment reserve. Included in this figure was the net profit from sales of investments of £72,559 (£21,029). The balance carried forward rose to £98,027 from £70,612. Mr. C. S. Corder is chairman. Meeting, Salisbury, Rhodesia, June 30.

RAND AND O.F.S. RETURNS FOR MAY

Company	May 1955			Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Gold Fields									
Doomfontein	50	19,632	87.4	548	194,992	934.1	329	97,800	373.2
Libanon	104	21,840	60.0	1,082	228,487	592.1	984	201,366	523.9
Lupatards V	27	20,279	31.8	1,278	132,853	442.4	1,176	220,163	461.5
Rietfontein	127	6,045	20.5	133	29,980	101.9	139	30,972	120.2
Robinson	80	17,084	15.5	412	88,743	106.7	479	120,504	115.0
Simmer	121	20,208	17.1	588	99,032	75.6	631	101,554	56.4
Sub Nigel	67	21,446	86.6	728	238,492	1011.0	730	241,354	1097.0
Venterspost	122	28,591	74.0	1,189	291,709	713.4	1,187	275,893	639.2
Vlakfontein	38	14,149	73.3	203	66,783	368.0	192	68,154	355.7
Vogels	103	26,569	112.5	514	132,780	561.4	510	128,834	540.3
West Drie	70	53,645	431.7	643	489,384	3834.7	507	371,404	2986.4
Anglo									
Brakpan	105	18,583	17.6	532	90,637	73.3	550	94,060	76.3
Daggas	232	52,825	323.2	1,126	257,073	1582.6	1,085	252,907	1552.6
East Daggas	98	16,273	47.0	478	79,903	337.2	464	78,872	231.1
P. Brand	44	33,001	262.6	203	144,466	1100.3	8	—	—
P. Steyn	74	24,413	110.7	337	110,528	468.8	367	17,201	6.0
S.A. Lands	95	17,931	55.7	476	89,520	282.0	497	91,352	267.1
Springs	121	15,774	8.1	593	79,081	39.5	646	90,672	38.8
Welkom	82	15,288	8.8	391	77,524	39.3	336	66,785	3.9
W. Hlids	66	24,469	137.1	312	117,040	546.7	224	74,541	220.9
W. Reef Ex.	118	22,068	53.9	591	109,700	272.5	568	112,637	324.9
Central									
Blyvoor	113	63,929	499.7	1,147	260,498	5083.2	1,088	638,040	5125.6
City Deep	168	31,785	3.8	794	153,733	26.4	814	154,932	88.3
Cons. M.R.	182	25,188	26.2	1,909	275,785	290.7	1,839	259,955	241.1
Crown	314	49,290	51.9	1,471	1,047,435	246.0	1,361	217,468	238.8
D. Deep	282	30,767	51.0	879	148,633	242.1	858	142,651	208.6
E. Rand P.P.	117	52,450	165.0	1,053	250,255	772.0	964	219,470	577.6
Harmony	63	22,063	100.3	418	148,531	507.3	—	—	—
Modder B.	60	5,879	1.1	285	28,397	5.2	280	29,337	12.9
Modder East	132	13,547	14.5	1,163	152,534	167.2	1,246	42,827	143.9
Rose Deep	61	9,315	7.6	302	47,148	40.4	343	53,086	60.9
Welgedacht	34	3,818	0.5	367	42,503	13.3	367	44,930	27.1
J.C.I.*									
E. Champ	20	1,641	6.6	99	7,640	229.9	120	11,656	147.4
Freddies C.	75	13,397	149.9	417	75,522	135.7	—	—	—
Govt. G.M.	248	31,126	22.0	1,270	165,171	169.2	1,283	166,332	150.1
Randfontein	270	28,527	94.2	1,284	145,972	2425.8	1,441	192,766	64.4
Union									
East Geduld	152	46,733	351.9	735	226,029	1698.7	660	202,927	1477.5
Geduld Prop	104	16,652	45.0	502	82,626	224.7	447	72,904	122.2
Grootvlei	200	43,305	254.8	945	204,324	1167.2	884	188,268	1050.5
Marievale	72	18,681	88.6	363	91,177	435.2	318	80,811	148.0
St. Helena	105	27,564	132.6	515	119,369	583.2	387	85,245	243.2
Van Dyk	80	13,197	1.5	397	65,789	7.2	390	67,734	10.5
General									
Ellaton Gldh	31	8,993	42.1	150	45,600	231.0	127	33,838	129.3
S. Roodep.	28	5,940	20.3	302	65,250	222.3	301	65,426	222.4
Stifffontein	83	32,591	203.2	417	163,906	1032.4	395	128,075	703.8
W. Rand C.	249	29,086	624.0	1,174	137,774	1104.3	1,107	135,149	889.5
Anglo									
Transvaal	11	1,387	40.2	56	7,009	13.1	56	2,891	14.7
N. Klerks	189	30,240	43.8	2,043	337,303	505.6	1,800	308,336	234.6
Village M.R.	35	5,205	9.7	379	56,944	109.4	376	57,823	129.7
Virginia	60	12,900	42.3	416	82,563	140.3	—	—	—
Others									
N. Klein	114	13,025	7.0	535	63,914	29.0	535	66,805	79.7
Nigel Gold	26	3,622	1.1	119	18,287	5.8	138	21,014	13.4
W. Nigel	18	4,015	8.3	197	43,629	105.2	190	42,644	93.4

L Indicates loss.

* Working profit figure, includes Sundry Revenue.

† Excludes gold sales at premium prices.

‡ Gold and uranium.

§ Previous year's figures not comparable.

a Gold and pyrite.

b Excluding uranium profits.

c Excludes £24,000 gross profit from gold/uranium subject to deductions.

d Excluding £41,000 uranium profit. Before loan and interest repayments.

e After crediting £40,000 estimated uranium revenue.

f After crediting £11,017 estimated net revenue from pyrite.

g After crediting £290,000 estimated net revenue from uranium and acid.

h After crediting £273,660 estimated profit from uranium.

i After crediting £1,000 from uranium before deductions of £625.

j After crediting £21,647 from acid before deductions of £15,148.

Gold Mine Returns

SOUTHERN RHODESIAN GOLD

Company	April, 1955			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Arcturus	3.1	995	3.2	10	30.6	9,160	30.4	31.1	—	30.6
Cam & Motor	—	—	—	—	—	—	—	—	—	—
Connaught	—	—	—	—	—	—	—	—	—	—
Falcon Mines	17.5	3,158	8.3†	7	120.3	21,888	80.6	117.2	18,981	47.6
Globe & Phoenix	6.0	3,539	23.1	4	24.2	14,127	93.6	24.2	14,302	93.5
Motati Gold*	15.8	2,286	1.1	4	60.5	8,562	1.2	72.9	10,007	14.8
Muriel Mine	3.4	1,217	10.0	10	41.7	9,982	100.6	62.2	—	77.2
Tetebwe	7.8	978	1.5	10	73.5	9,982	13.2	81.2	—	24.6

* Excluding premium gold sales.

L indicates a loss.

† In addition £3,333 from accumulated concentrates from Dalny Mine retreated.

AUSTRALIAN GOLD

Company	4 weeks to April 19 1955			4 weekly periods since year-end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Central Norseman	12.2	6,829	1	1	12.2	6,829	11.8	6,162	—	—
Central Victoria*	83.5	348	1	1	83.5	348	181.2	728	—	—
G.M.'s of Kalgoolie†	34.7	9,129	1	1	34.7	9,129	13.6	3,350	—	—
Great Western Cons.	31.7	4,691	1	1	31.7	4,691	32.5	3,242	—	—
Morning Star	1.4	831	1	1	1.4	831	1.3	1,185	—	—
New Coolgardie	4.0	1,664	1	1	4.0	1,664	4.3	2,436	—	—
North Kalbarri	28.1	4,475	4	4	99.9	21,630	75.9	17,947	—	—
Sons of Gwalia	9.3	2,629	4	4	36.5	7,717	30.2	6,038	—	—

* Cu. yd. dredged.

† From April 1955, figures include output from Boulder Perseverance, Kalgoolie Enterprise and South Kalgoolies Cons. Last year's figures are therefore not comparable.

WEST AFRICAN GOLD

Company	April, 1955			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Amal. Banket	81.5	12,163	35.8	7	583.0	90,107	238.1	468.7	75,839	97.5
Ariston Gold	37.4	10,623	40.8	7	160.3	75,128	326.5	224.7	73,214	332.0
Ashanti	26.5	16,292	71.7	7	172.0	114,046	491.5	170.5	109,942	445.0
Bibiani (1927)	30.0	6,250	10.8	7	209.0	44,350	96.4	213.1	44,005	55.8
Bremang*	788.9	3,820	7.5	4	2508.0	11,145	12.3	1574.4	5,275	13.5
G.C.M. Reef	9.4	3,264	9.4	10	96.4	37,572	126.7	83.1	38,124	118.8
Konongo	3.4	3,174	16.1	7	23.9	22,268	110.5	18.7	19,404	96.7
Lyndhurst Deep	1.2	1,172	5.1	7	7.2	8,054	42.7	6.9	8,192	39.4
Taqaah & Abos	29.0	5,675	1.0	1	29.0	5,675	1.0	27.0	5,834	3.4

* Cu. yds. dredged.

L denotes loss.

Profit figures include premium revenue.

INDIAN GOLD

Company	April, 1955			Months since year end	Current Financial Year Total to date			Last Financial Year Total to date		
	Tons (000)	Yield (oz.)	Profit (£000)		Tons (000)	Yield (oz.)	Profit (£000)	Tons (000)	Yield (oz.)	Profit (£000)
Champion Reef	11.7	4,266	4	4	56.7	20,338	58.7	23,122	—	—
Mysore	11.9	4,009	4	4	61.4	19,467	68.7	27,032	—	—
Nunddyroog*	17.6	5,160	4	4	71.2	19,626	83.7	23,814	—	—

* Includes tailings.

MISCELLANEOUS GOLD

Company	April 1955		Months since year-end	Current Financial Year Total to date		Last Financial Year Total to date	
	Tons (000)	Yield (oz.)		Tons (000)	Yield (oz.)	Tons (000)	Yield (oz.)
Br. Gv. Consol.*	224.6	1,603	4	679.3	5,475	700.7	7,049
Clutha River*	184.0	364	1	184.0	364	222.0	333
Frontino	11.9	6,062	4	46.6	24,232	39.8	23,553
Kentian (Geita)	22.6	3,420	10	224.9	34,146	212.5	32,185
New Gu. Gldfids	3.1	1,288.8	7	24.3	9,630	22.3	9,543
St. John d'El Rey†	26.3	113.5†	4	110.3	464.0†	106.1	479.9

Mining Men and Matters

Mr. Denys Bryars has been appointed to the board of the Sheffield Smelting Company with special responsibility in the field of sales control and **Mr. Ronald R. Ellerby** has been appointed a special director.

The Rt. Hon. Sir Winston S. Churchill has accepted Honorary Membership of the Institution of Mining and Metallurgy.

Sir John Cockcroft, director of the Atomic Energy Research Establishment, Harwell, has been re-elected president of the Institute of Physics.

Jenolite Ltd. have changed their address from Piazza Chambers, Covent Garden, W.C.2, to new premises at 13-17 Rathbone Street, London, W.1. Telephone: MUSeum 5541.

Mr. R. J. Moffat, deputy general of marketing, will succeed **Sir William McGilvray** as director-general of marketing on July 1.

Lincoln Electric Company, an associate of the G.K.N. Group, has announced that **Mr. H. F. Hodgson**, **Mr. A. F. Gadsby**, **Mr. R. L. Swan** and **Mr. F. A. Thomas** have been appointed to the board. **Mr. R. E. Clipsham** is chairman and managing director and **Mr. A. B. Marsh** is director and secretary.

Mr. Ralph D. Parker has been elected vice-president and **Mr. Walter A. McCadden** has been elected comptroller of the International Nickel Company of Canada.

Triefus Act as Valuers to Tanganyika Government: Triefus and Co. Ltd. act as valuers of diamonds to the Tanganyika Government jointly with **Mr. Couzyn**. In last week's issue, on page 668, in the report of the annual statement to shareholders by **Mr. Albert Triefus**, chairman and managing director, it was inadvertently stated that the company acted as valuers to the Tanganyika Government jointly with **Mr. Couzyn**. As aforementioned, this should have read **Mr. Couzyn**.

Atlas Diesel's New Scottish Premises. The Scottish office and service depot at Atlas Diesel Company have been moved from Boswell Square, Hillington, Glasgow, S.W.2, to larger premises at 591 Nitshill Road, Glasgow, S.W.3. Telephone: Barrhead 2346/8.



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- 4 Climax $3\frac{1}{2}$ " Drifters with feed cradles, pug shank chucks.

PNEUMATIC TOOLS

- 20 Boyer longstroke rivet hammers, CP 60.
- 20 CP.4 high lift sump pumps.
- 20 Consolidated picks, D.22's.

ALL "AS NEW" OR RECONDITIONED

HALKYN DISTRICT UNITED MINES

The Twenty-seventh Annual General Meeting of Halkyn District United Mines, Limited, was held on June 14 at Chester.

Mr. R. W. Banks, C.B.E., Chairman, presided.

The following details of operations during 1954 are taken from the Directors' Report as submitted to the meeting and the Statement of the Chairman.

Production of lead concentrates, half of which was derived from development work, amounted to 2,730 tons, a slight increase over the figure for the previous year. Production of zinc concentrates rose sharply from 456 tons in 1953 to 798 tons in 1954. There was a further substantial addition to ore reserves at the end of 1954.

The main crosscut south was driven a further 609 feet during 1954, its face at the end of the year having reached a point about $8\frac{1}{2}$ miles from its outfall at Bagillt. The main sources of ore supply already lie some four miles south of the mill at Penybryn and it is hoped that additional sources will be discovered still farther to the south as the main crosscut south advances. It seems probable, therefore, that in order to ensure continuity of the company's operations, provision will ultimately have to be made for new milling facilities farther south.

Limestone operations continued throughout 1954, sales of high-grade material for industrial purposes showing an encouraging increase, but agricultural demand was seriously curtailed by the bad weather which prevailed, particularly during the second half of the year.

Operations in general were much handicapped by heavy rainfall which amounted to 48 inches during 1954 as compared with an average of just under 33 inches for the previous twelve years. At one period the quantity of water flowing out of the main crosscut south at Bagillt was in excess of 300 million gallons per week.

The accounts show a profit for 1954 carried to appropriation account of £50,199 (£42,679). After provision of £4,952 (£9,245) net for taxation and £13,705 (£22,857) for writing-down capital assets, the available balance, including £23,237 brought forward from the previous account, is £54,779. The balance carried forward after deducting £11,827 for a dividend of 6d. per unit of stock is £42,952.

The Board think it prudent, in view of the possible need for provision for new milling facilities farther south, to maintain the very liquid financial position shown in the accounts.

The Chairman concluded his statement with a warm tribute to the company's General Manager, **Mr. G. W. Craddock**, and the staff and labour force under his direction at Halkyn for the persevering way in which they had contended with the difficult conditions underground resulting from excessive rainfall and with an acknowledgment of the valuable advice which Messrs. John Taylor and Sons, consulting engineers, and Messrs. Mackay and Schnellmann, consulting geologists, continued to give to the company.

The Report and Accounts were adopted.

DIVIDENDS

- Apex (Trinidad) Oilfields 5% *i* (July 23)
- Ayer Hitam Tin Is. 3d. *i* (July 12)
- Consolidated Co. Bultfontein 7.25d. (July 28)
- Eastern Transvaal Consolidated Mines $7\frac{1}{2}$ %
- Gopeng Consolidated 5% *i* (July 14)
- Griqualand West Diamond 2s. 11d. (July 28)
- Idris Hydraulic Tin 4 $\frac{1}{2}$ d. *i* (July 6)
- Kinta Tin Mines 10% *i* (June 25)
- Lydenburg Platinum 6 $\frac{1}{2}$ %
- Malayan Tin Dredging 4d. *i* (July 22)
- Siamese Tin Syndicate $7\frac{1}{2}$ % *i* (June 24)
- Southern Malayan Tin 4d. *i* (July 20)
- Southern Tronoh Tin 6d. *i* (June 28)
- Sungei Kinta Tin Is.
- Tronoh Mines 3d. *i* (July 1)
- Village Main Reef 10%

i interim

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BRITISH-BORNEO PETROLEUM SYNDICATE

The forty-first annual general meeting of the British-Borneo Petroleum Syndicate, Ltd., was held on June 8 in London, Mr. Malcolm MacLachlan (Chairman and Managing Director) presiding.

The Chairman said:—

The Profit and Loss Account shows that the revenue for the year, which is derived from our royalty on the production of oil in Brunei, dividends from our investments, and profits on sales of securities, amounted to £306,000. Expenses and directors' emoluments were £14,000, leaving a net profit for the year of £292,000. In the Appropriation Account this profit is added to the £48,000 of unappropriated profits brought forward from the previous year, giving a total to be dealt with of £340,000. Of this amount taxation absorbs £158,000, £20,000 has been transferred to Investment Reserve and £35,000 has been appropriated to General Reserve.

We now recommend the payment in respect of the year to March 31 last of a dividend No. 47 of 1s. 4d. free of income tax per unit of stock. The dividend will be paid on June 30 next.

The profit for the year constitutes a further record and has enabled us to recommend an increase in the rate of dividend for the sixth year in succession. The dividend is payable on the larger capital and represents an increase of 24.4 per cent in the cash receivable by the stockholders. I am sure it will be agreed that it is very satisfactory that we have been able to do this and also to strengthen our reserve position.

In reviewing our interests it will be recalled that our oil interests in British-Borneo now consist of the right to receive a royalty on all oil production in the State of Brunei, where the fields are operated by the British-Malayan Petroleum Company, a member of the Shell Group, and also on any oil production which that Group may obtain from the Klias Peninsula in British North Borneo. During the year the active production programme of the British Malayan Company in its Seria field in Brunei has been attended with satisfactory results. The royalty we have received from that source has made the principal contribution to our revenue for the year.

The operations of Apex (Trinidad) Oilfields continue to prosper and oil production for the year to September 30, 1954, was 3,125,000 barrels. The profit after taxation amounted to £631,000. During the year the Apex Company capitalized £550,000 of its reserves and distributed to its members one fully paid unit of stock for each unit held. In addition the Company paid a dividend of 1s. 6d. free of tax on its doubled capital, representing an increase of 20 per cent in the cash receivable by its stockholders. Oil production of the Apex Company for the first 8 months of the current year amounts to 2,099,000 barrels.

The greater part of our interests lies in the oil industry which continues to expand and prosper; in addition we have a number of general investments. The following is an analysis of our investments which have Stock Exchange quotations, based on the Stock Exchange valuation at the date of our balance sheet. Oil stocks 64 per cent, Mining Finance and Mining Companies 22 per cent, Home Industrials 10 per cent and American Securities 4 per cent. The Stock Exchange value of these investments is substantially in excess of the amount at which they are included in the balance sheet.

In this connection I desire to point out that in our view it is prudent not to place emphasis on the unrealized appreciation of investments which may be subject to fluctuation and also to heavy taxation in the event of realization.

At the same time I believe members will be interested to know that the surplus over the book value of our investments is now in excess of half a million pounds.

It has been our policy since we regained our principal source of revenue at the end of the war both to pay increased dividends to our members and to build up a portfolio of investments which have been selected both for revenue and for potential capital appreciation.

As I have stated the majority of our holdings is in oil stocks; these include Apex Trinidad, British Petroleum, Burmah Oil, Canadian Eagle and Shell. Although at current Stock Exchange prices the yield from some of these stocks is not high, their dividends are amply covered by their earnings and there is every reason to have confidence in their future prospects.

We also have a substantial part of our investments in carefully selected mining companies, a number of which are still in the development stage.

We shall continue to build up our investments with a view to the expansion of our dividend income in the years to come.

The report and accounts were unanimously adopted and the retiring Director, Mr. C. L. Nelson, was re-elected.

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DECLARATION OF DIVIDENDS

NOTICE IS HEREBY GIVEN that DIVIDENDS have been declared payable to shareholders registered in the books of the under-mentioned Companies at the close of business on June 30, 1955, and to persons presenting the respective Coupons detached from Share Warrants. Dividends on shares included in Share Warrants will be paid in terms of a notice to be published later by the London Secretaries of the Companies.

Name of Company (Each incorporated in the Union of South Africa)	Dividend No.	Coupon No.	Dividend Per Share s. d.
Rand Mines, Limited	104	104	2 9
Blyvooruitzicht Gold Mining Company Limited	19		1 1
Consolidated Main Reef Mines and Estate, Limited	91	88	2 6
Crown Mines, Limited	108	108	3 6
Durban Roodepoort Deep, Limited	69	69	1 3
East Rand Proprietary Mines, Limited	71	72	1 9
Modderfontein East, Limited ..	56	37	1 6
Transvaal Gold Mining Estates, Limited	89	89	6

The Dividends are declared in South African currency and become due on July 1, 1955. Payment from the Office of the London Secretaries will be in British currency at par provided that should there be any difference that may be regarded by the Boards as material between the two currencies on July 1, 1955, payment will be made on the basis of the equivalent British currency calculated at the rate of exchange ruling on that date.

Warrants in payment will be posted on or about August 4, 1955, to shareholders at their registered addresses or in accordance with their written instructions. Warrants will be despatched from the Registered Office, Johannesburg, to addresses in Africa south of the Equator and from the Office of the London Secretaries to addresses elsewhere. Instructions which will necessitate an alteration in the Office from which payment is to be made must be accepted by the Companies on or before June 30, 1955. Other changes of dividend instructions to apply to these dividends must be received by the Companies not later than July 21, 1955.

The Transfer Books and Register of Members will be closed in each case from July 1 to 7, 1955, both days inclusive.

By Order of the Boards,
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of the above-named Companies.

Office of the London Secretaries :
4 London Wall Buildings, London, E.C.2.
June 9, 1955.

BURMA MINES LIMITED

The following summarizes the Operating results of BURMA CORPORATION (1954) LIMITED (Incorporated in the Union of Burma and jointly owned by Burma Mines Limited and the Union Government) for the nine months ended March 31, 1955.

ORE EXTRACTION

Quarter ended September 30, 1954	25,541 tons
Quarter ended December 31, 1954	26,240 "
Quarter ended March 31, 1955	24,793 "
	76,574 tons

PRODUCTION

Quarter Ended	Concentrating Ore Milled (dry tons)	Oz. Silver	% Lead	% Zinc
September 30, 1954	24,495	14,461	18.125	11.995
December 31, 1954	25,320	13,623	16.968	10.943
March 31, 1955	24,920	13,067	16.501	10.669

Marketable products were as follows :—

Quarter Ended	Refined Lead Tons	Refined Antimonial Lead Tons	Refined and Dross Silver Oz.	Copper Matte Tons	Nickel Speiss Tons	Zinc Concentrates 57%-58% Zn. Dry Tons
September 30, 1954	2,615	126	227,175	71	148	3,347
December 31, 1954	3,221	194	279,552	77	185	2,994
March 31, 1955	3,529	—	310,654	50	35	2,954
	9,365	320	817,381	198	368	9,295

ESTIMATED REVENUE AND EXPENDITURE

	For Quarter ended March 31, 1955	For the nine months ended March 31, 1955
Estimated Gross Revenue (after adjustment of value of Metal Stocks)	K. 87,51,800	K. 2,34,04,700
Estimated Operating Expenditure	K. 57,92,700	K. 1,57,61,700
Estimated Operating Profit	K. 29,59,100	K. 76,43,000
Estimated Taxation	K. 15,83,000	K. 40,00,000
Estimated Depreciation	K. 1,70,300	K. 4,70,200
Capital Expenditure	K. 2,77,800	K. 8,68,200

After deducting the foregoing estimates for Taxation and Depreciation the estimated Net Profit for the nine months is K. 31,72,800 (£237,960). (Nine months ended March 31, 1954, K. 21,18,400 (£158,880).)

The Loss incurred for 1952/53 allowable for Taxation purposes was fully absorbed by the Profit realized for 1953/54. Profit for 1954/55 will therefore suffer tax at the full rate and provision has been made accordingly.

The Sterling figures shown are based on a Rate of Exchange of 1/6d. per Kyat.

GENERAL

As an alternative to the construction of a new concentrating plant investigations into the possibility of expanding the capacity of the existing plant are now in hand. The decision whether to proceed with the projected new plant has been deferred pending results of more intensive geological exploration which it is hoped the Corporation will be in a position to conduct in the near future.

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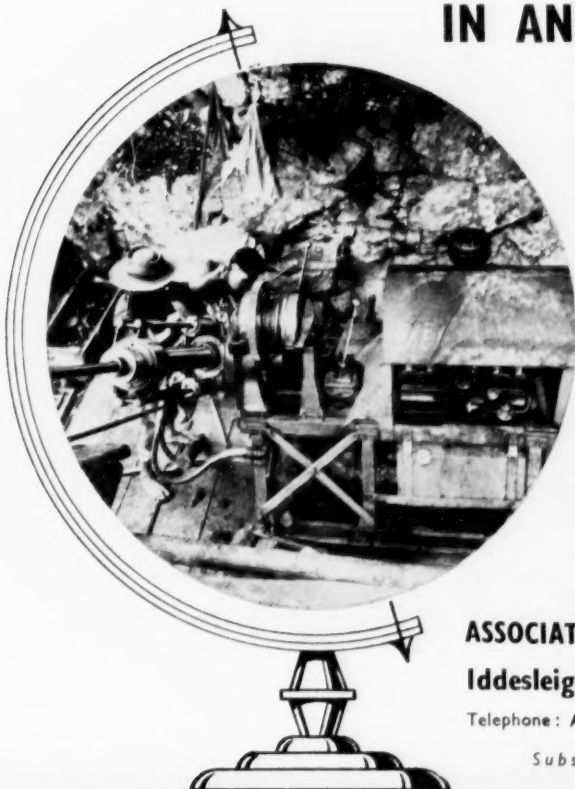
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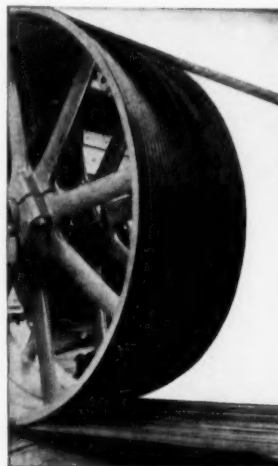
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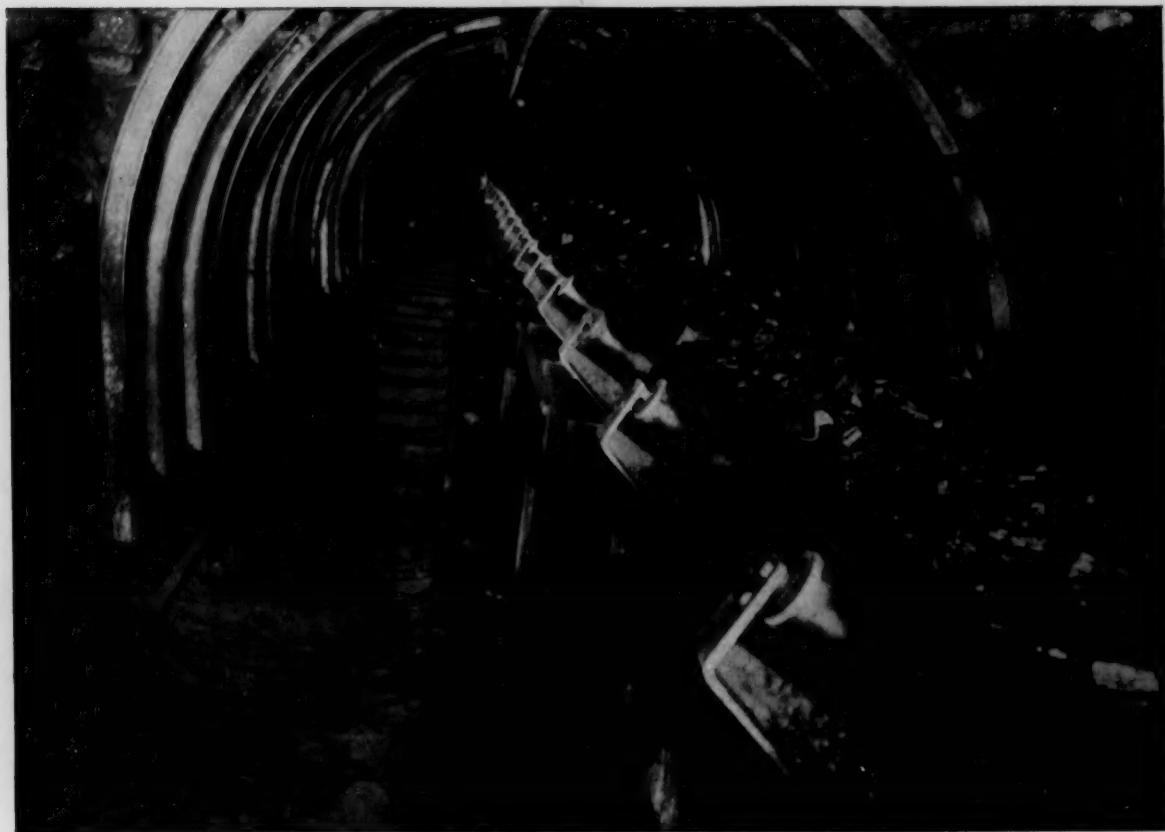
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